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Volume XIX CALCUTTA, DECEMBER, 1949 Number 3

Association Office
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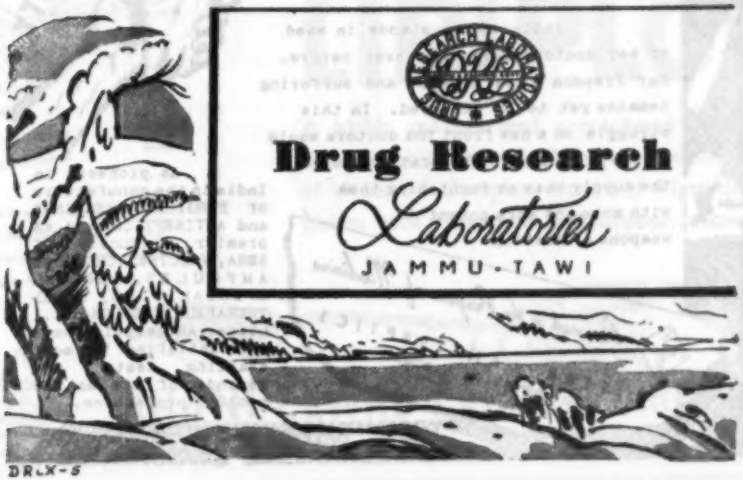

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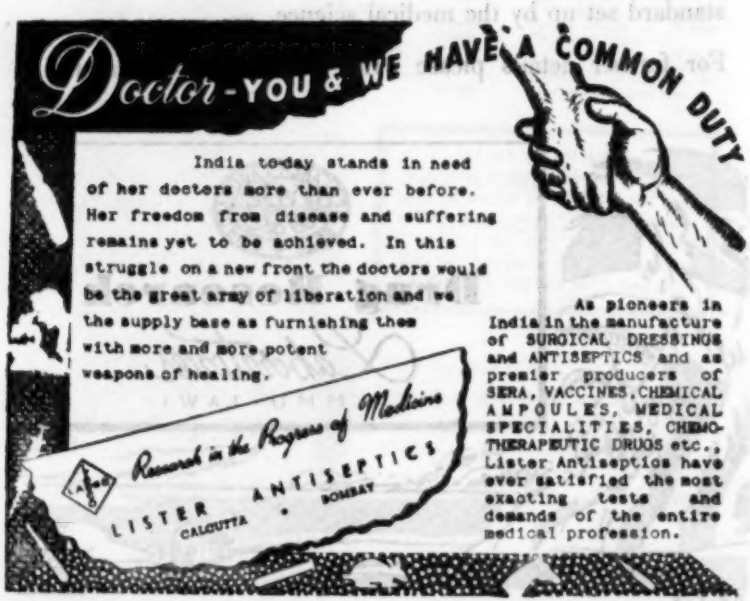
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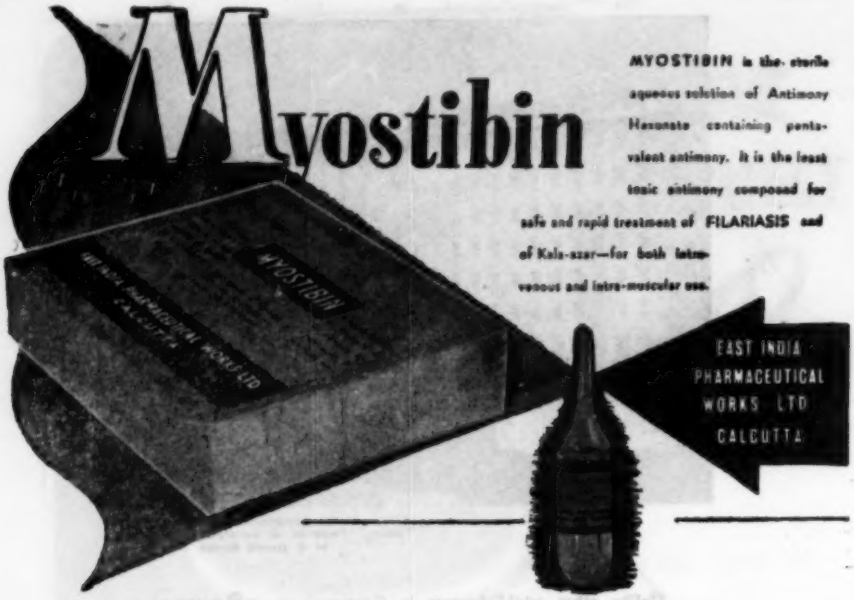

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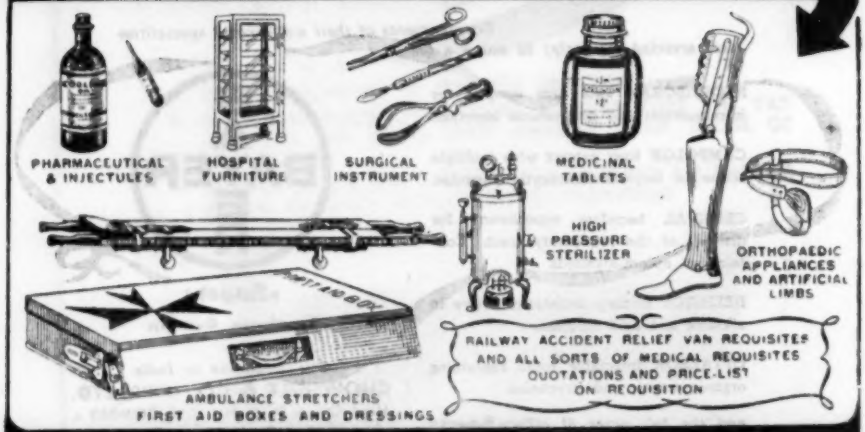

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Journal of the
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Vol. XIX, No. 3 CALCUTTA December, 1949

ADAMANTOBLASTOMA : HAEMANGIOADAMANTOBLASTOMA

K. V. SUBBA RAO, M.B.B.S., D.T.M. & H. (ENG.),

Department of Pathology,

Andhra Medical College, Visakhapatnam

AND

P. NARASIMHA RAO, M.S.,

Lecturer in E.N.T. Diseases, Andhra Medical College & E.N.T. Surgeon, King George Hospital, Visakhapatnam.

Introduction and Literature

The maxillary tumours of the dental origin are not uncommon and have been recognized for more than a century. The structural detail and the probable histogenesis were also conceived by several writers since 1850.

The first description of the dental tumours was found in the Scultet's Armamentarium Chirurgicum (1655) and the term 'adamantoma' was first suggested by Goeball in 1897 and reintroduced by Ferrero in 1906. The first complete description of these oral tumours was credited to Falkson (1879), who advanced the theory of enamel organ origin. But the entire subject received a different orientation after the classic studies of Mallessez in 1885. He described several cell types—superficial cells, lying beneath the gingival epithelium, intermediate, lying along side of the tooth, and the deep connected with the enamel organ. Many of these cell groups, according to him, persisted in adults, not as offshoots or as misplaced enamel organs, but as analogues of rich dental apparatus of lower vertebra and gave rise to certain types of jaw tumours, which he called adamantine epithelioma. This outstanding work of Mallessez stimulated others and several notable contributions were made in this field of onchology. Among these may be mentioned, Borst, for introducing the word 'adamantinoma'; Ivy and Churchill for suggesting the name ameloblastoma'; Robinson, for his exhaustive review of 379 cases and subscribing to the above mentioned descriptive term, 'ameloblastoma'; McFarlane and Patterson for their critical review of 196 cases; James and Counsell, two prominent British writers, for their contribution to the etiology of these odontogenic tumours. Thoma must be credited for coining the term 'adamantoblastoma', which appears to have the merit of simplicity and the logic, and at the same time descriptive.

Definition

Adamantoblastoma may be defined as an epithelial tumour arising from the cells of the enamel organ. The unspecialized cells are capable of forming any or all of the large variety of epithelial cell-forms through their embryonic multipolarity. The tumour is usually, unicentric, non-functional, intermittent in growth, anatomicallly benign and clinically persistent.

Synonyms

In view of the lack of unanimity about the origin of these tumours they are referred to in the literature by various names. Among these, to mention a few, are adamantinomas, adamantomas, cystadenomas of the jaw, ameloblastomas, enameloblastomas, epithelioma adamentinum, adamentino-carcinoma and adamantoblastoma. The common of these are adamantinoma, enameloblastoma, ameloblastoma, and adamantoblastoma. Adamantoma and adamantinoma are derived from the Greek word "adauac" meaning 'of the hardness of the stone'. These terms are a misnomer as the tumours do not contain any formed enamel. Similarly enameloblastoma is an unsatisfactory term since the tumour does not necessarily contain the already differentiated specialized cells. For similar reasons ameloblastoma is not descriptive. The only descriptive term indicating the histological and morphological features is adamantoblastoma and the term is used throughout in this article to describe this type of odontogenic tumours. This confusion in nomenclature is partly due to lack of understanding of the embryology

and histogenesis of the tooth in general and the etiology of these tumours in particular.

Embryology and Histology

The precursor of the tooth bud starts as a thickening of the oral epithelium during the sixth week of the embryonic life. The thickened epithelium which is the primordium of the ectodermal portion of tooth, known as the dental lamina, invaginates. The surrounding connective tissue condenses and differentiates into dental papilla. Tooth is thus formed from two sources —the enamel from the ectoderm, and the dentine with its associated tissues, that is—tooth pulp and the cement from the mesoderm. The central cells of the thickened epithelium differentiates into reticular cells and the peripheral into cuboidal cells. The peripheral cells further divide into inner and outer layers. The outer layer forms the sheath of Hertwig. The adamantoblastomas arise from any of these cells, either differentiated or during the various stages of differentiation. Morphologically too, various structural changes are noted. In general, these tumours may be either solid or cystic. If solid the tumour appears to be firm and fibrous with occasional degenerative changes. If cystic it may be unilocular or multilocular. The cavities may vary in size and may be intercommunicative or may show papillary projections. The contents may be clear fluid or jelly like substance or colloidal like material. The lining membrane may be smooth and shining or irregular with papillary projections.

The microscopic picture is equally pleomorphic and various histological types have been distinguished.

1. Epithelial type of adamantoblastoma.
2. Ameloblastic type of adamantoblastoma.
3. Acanthoma type of adamantoblastoma.
4. Stellate type of adamantoblastoma.
5. Adamantinocarcinoma type of adamantoblastoma.
6. Melanotic adamantinoblastoma.
7. Hæmangioadamantoblastoma.
8. Adenoadamantoblastoma.

Among these, hæmangioadamantoblastoma is a rare type. Only two cases of this type have so far been reported. The following mentioned case is of interest for its varied histologic picture and of being the third case of hæmangioadamantoblastoma in the literature.

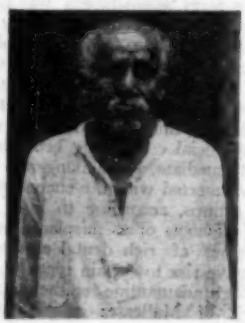
Case History

A Hindu male aged sixty years, was admitted on 10-4-47 for the treatment of a swelling of the right side of the face with obstruction to breathing and blood stained discharge from the nasal cavity. Ten years ago, he noticed similar growth on the inner side of the right alæ nasi blocking the nose. The tumour which was removed then, was reported to be soft and smooth. It was of the size of a lemon and was cystic in areas on cut section. Histologically it was thought to be spheroidal-cell carcinoma. Three years after the first removal, the growth recurred and gradually increased to the present size—size of an orange. At

The Reported Case before Operation

the time of admission, the tumour was found to be filling the right nasal cavity and was involving the right antrum and the palate. The skin over the tumour and the regional glands were not involved. The growth was ulcerated on the buccal aspect with everted and indurated edges. The surface was covered with a small quantity of slough and the base was firm. A small piece taken from this area histologically showed a typical squamous-cell carcinoma with a tendency for glandular formation.

Ligature of the external carotid was done and three days later, the whole tumour including the maxilla was removed under local anæsthesia by one of us (P.N.R.) on 15-5-47. The approach was by means of Furgusson's incision. At the time of operation, 500 c.c. of blood was transfused. The operation was uneventful, post-operative period fairly normal and the patient was discharged cured on 17-7-47.



The Reported Case after Operation

Fig. I—Showing Internal Aspect of the Tumour after Removal. The Arrow Points to Areas of Haemangioadamantoblasoma.

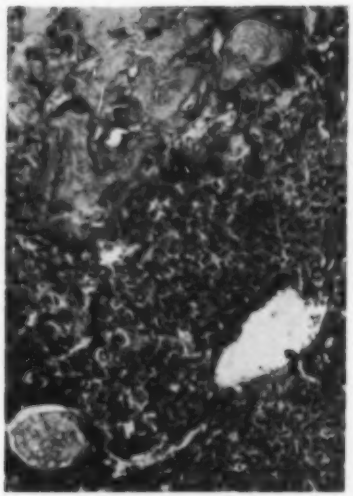


Fig. II—Showing Area of Epitheliomatous Change.

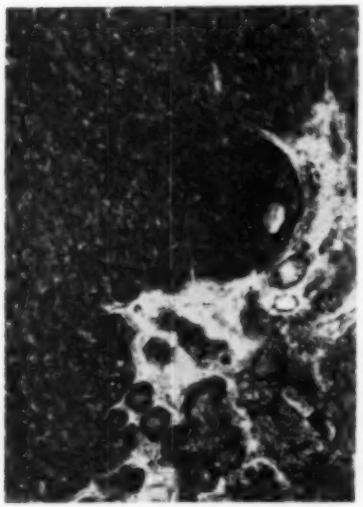
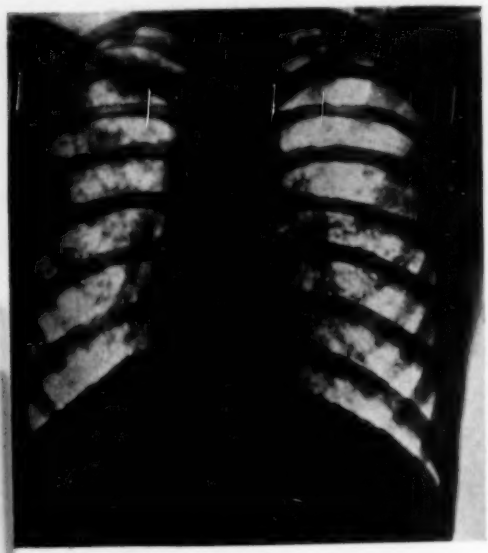
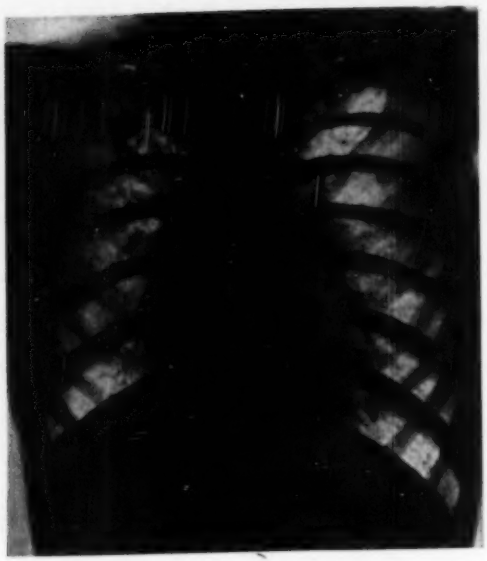


Fig III—Showing Area of Glandular Formation.

Fig IV—Showing Numerous Dilated Blood-spaces (Low Power)



SKIAGRAM 1



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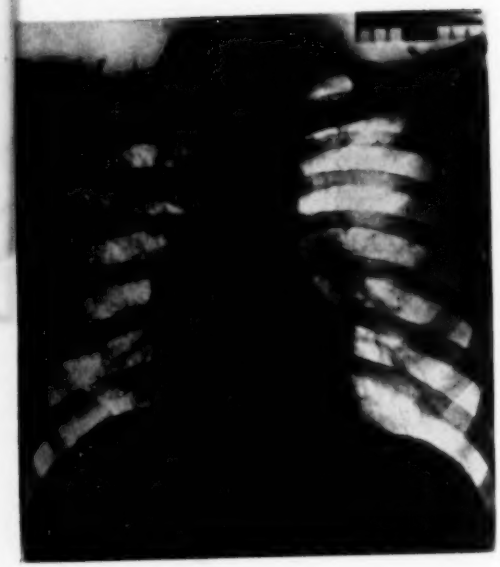

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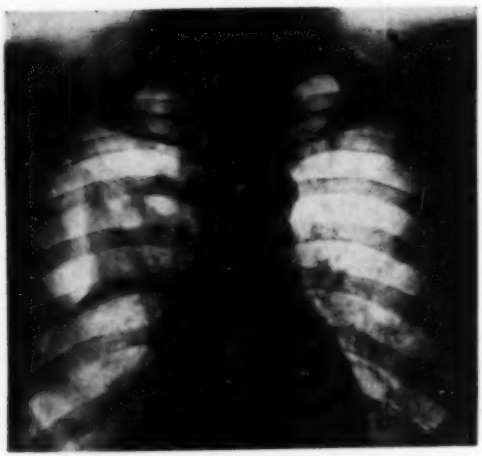

SKIAGRAM 4

The tumour which was irregularly oval of the size of an orange was firm in consistency and pale yellow in colour. It was filling the whole of the antrum and projecting both towards palatal and nasal surfaces of the maxilla. The cut surface of the tumour showed mainly whitish firm tissue with irregular areas of hæmorrhage of the size of an almond interspersing the whole tissue. Around the hæmorrhages there was condensation of firm fibrous strands. Histologically, the appearances are that of adamantoblastoma of glandular type showing in places squamous metaplasia with large areas of hæmorrhage. The peculiar feature is the large blood spaces inside the tumour with the appearances of hæmangioadamantoblastomas (see Plate). In some places the stroma has enamel buds just underneath the epithelium (epithelial debris of Mallessez).

The first case of hæmangioadamantoblastoma was described by Kuhn (1932). It was a central tumour of the size of a walnut, surrounded by fibrous capsule. In certain places of the neoplasm the epithelial tissue was seen surrounded by large blood-filled spaces. The second case of adamantoblastoma of this type was reported by Œstrreich (1936). Our case, the third in the series, shows both macroscopically and microscopically large blood spaces in the tumour. These spaces were lined by epithelial cells and surrounded by thick fibrous tissue.

Comment

An outstanding feature of adamantoblastoma is the pleomorphic appearance of the tumour, both morphologically and histologically. This feature can be attributed to the fact that the tumour arises from the cells during the course of their differentiation and from the cells that fail to differentiate. This variegated picture in different tumours and in the same tumour is responsible for much confusion and many conflicting ideas. From the critical studies of the literature, it is reasonable to presume that the primordium for this type of neoplasm is some sort of odontogenic apparatus or cells which have a tendency to form this apparatus, namely, debris of Mallessez or the sheath of Hertwig. It has been experimentally demonstrated that in a few cases, neoplastic changes of this type can be produced either by chronic irritation or by dietetic disturbances. But in a good number of cases no such causative factor is discernible and the growth would appear to be a spontaneous one.

Summary and Conclusions

1. Literature on the jaw tumours of the odontogenic origin has been reviewed.

2. Description and definition of the various terms used to signify these tumours and their histologic classification have been mentioned.

3. The third case of hæmangioadamantoblastoma, a rare type of adamantoblastoma, is described.

4. Etiology and pathogenesis with particular reference to these types have been discussed.

Acknowledgments

Our grateful thanks are due to late Dr. T. Bhaskara Menon, M.D., D.Sc., F.R.C.P. for his guidance in preparing this paper.

We thank Dr. G. S. Viswanathan, M.D., Professor of Pathology, Andhra Medical College, for his valuable suggestions.

Our thanks are due to Dr. M. V. Ramanamurty, F.R.C.S., Superintendent, King George Hospital, for permission to publish the case notes.

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STREPTOMYCIN IN THE TREATMENT OF TUBERCULOSIS *

S. K. SEN, M.B., T.D.D. (WALES),

Tuberculosis Officer, Jaipur State.

Every one must have followed from the very beginning the reports of experimental results of streptomycin on animals. There has been a regular flow of reports from abroad on the therapeutic results of this drug on human patients. Of all the reports so far received the one published by the Medical Research Council of England in the *Brit. M. J.*, October 30, 1948, is the most illuminating and most comprehensive. It is a brilliant piece of team work scientifically organized. So far as we in India are concerned no such work has yet been carried out. But the Tuberculosis Association of India organized a Symposium on Streptomycin which was held in the last Tuberculosis Conference in Calcutta. I had my paper which formed part of this symposium. So instead of referring you only to my own cases I shall quote the facts and figures from this Symposium and compare notes with the M. R. C. Report (Medical Research Council of England). My previous speaker, Dr. Heilig has given a short resume of the use of streptomycin in non-tuberculous cases. I shall confine myself to the use of streptomycin in tuberculosis.

One hundred and sixty-seven cases were taken into account in the Symposium and the M. R. C. reports on 107 cases. But the most important difference between the two studies lies in the fact that, whereas there was a control group in the M. R. C. investigation there was none in the Symposium. The following sanatoria participated in the Symposium. (1) Dharampur, (2) Kasauli, (3) Jubar, (4) Jaipur, (5) Miraj, (6) Madanapalle, (7) Perundrai, (8) Poona and (9) Ceylon. The Jadavpur Tuberculosis Hospital presented the report of treatment on 100 cases of pulmonary tuberculosis separately. So it will be seen that these places where these sanatoria are situated are very widely distributed. From the point of view of the diverse climatic conditions existent in this vast sub-continent this sort of wide distribution makes it justifiable to say that India was well represented.

Selection of Patients

Those who were unsuitable for collapse therapy or who had collapse therapy without success. This is common sense. Why should streptomycin be given where collapse therapy is efficient enough?

Types of Cases

All the cases, except 24, were far advanced or very far advanced. 141 had single or multiple cavities. 2 were miliary tuberculosis. Out of these 2 miliary cases I had reported one.

Dosage

Streptomycin was generally given 1 gm. daily in two divided doses. But in recent months it was reduced to ½ gm. per day in certain institutions. The M. R. C. patientts had 2 gms. daily for 4 months. The total dosage was as follows—

Upto 30 gms.	23 cases.
„ 60 „	80 „
„ 90 „	38 „
„ 120 „	26 „
	167 cases.

The result of treatment was generally assessed shortly after the treatment was stopped. Only a few were followed up for more than 2 months. This was so at the time of the symposium. But I have followed up 9 cases uptil now for a period of 4 months out of whom one is having relapse of subjective symptoms but without temperature. The results were analysed by the M. R. C. at the end of 6 months.

Toxicity

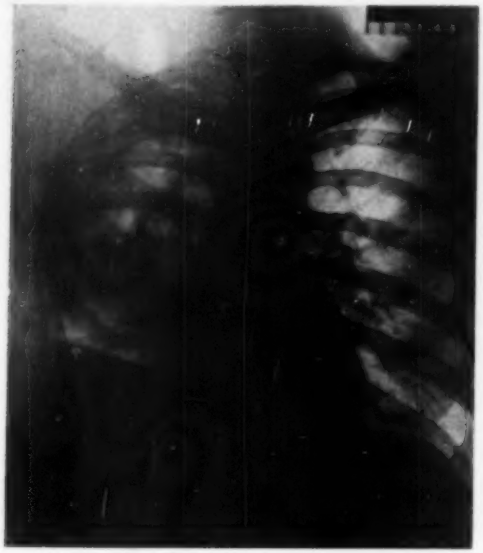
This is a very important practical point for consideration.

(*i*) Local reaction—Pain 25·8%
Abscess—1 case only.

(*ii*) General reaction—Giddiness 40% as against 65·5% of M.R.C. cases.
Headache 8·4%
Rash 6·6%
Nausea 6%

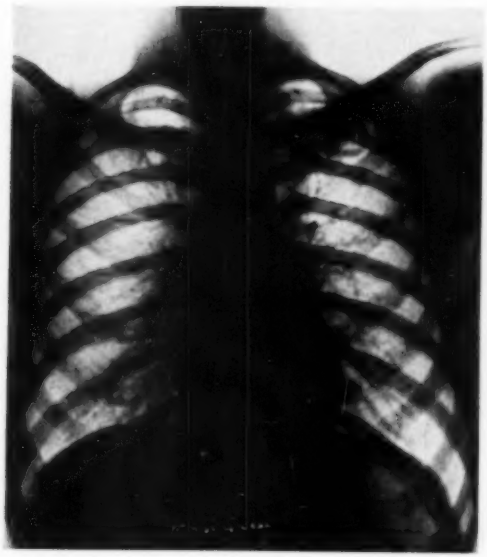
Giddiness is caused by disturbance of the vestibular apparatus. The difference of figures between the present series and M. R. C. is statistically significant. It may be explained by the daily dose in the M.R.C. series being 2 gms. In most cases in our series it was of temporary nature allowing for the resumption of streptomycin treatment after one or two weeks' interval. In this connection I may mention a very recent experience that the best way to continue streptomycin injections is to change over to Dihydrostreptomycin instead of withholding the injection altogether. Other toxic manifestations usually encountered are—deafness, nystagmus, and blurring of vision. The incidence of toxic symptoms, particularly giddiness, was directly proportional to the degree of general weakness of the patient. It occurred in 17 per cent among those whose general condition was good; 41 per cent in fair and 54 per cent in poor condition. So in the light of this experience the question that suggests itself is whether these symptoms are caused by intolerance rather than allergy. That is to say—are we dealing with toxicology of the drug or allergy? Allergy is not contingent upon the general condition however poor or good it may be. Secondly, allergy is the phenomenon of reaction to sensitized condition. But is this sensitive state dependent on high blood level of the allergen? Even assuming that

* Lecture delivered at the Fifth Anniversary of the Jaipur Medical Association held on 11th April, 1949.



Skiagram 5

Skiagram 6



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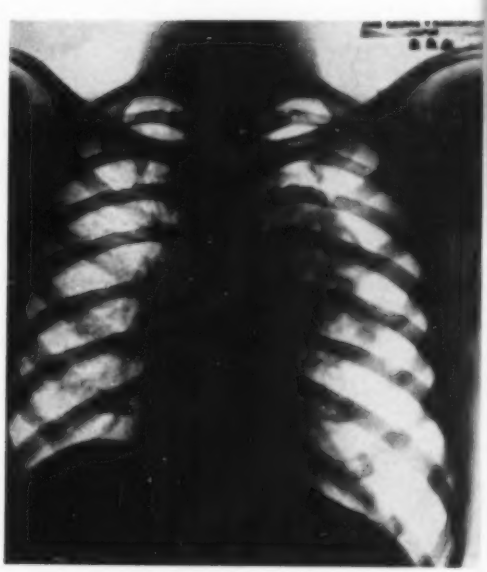

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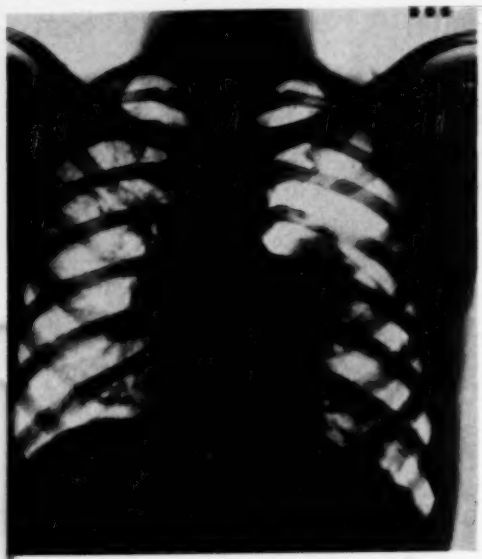

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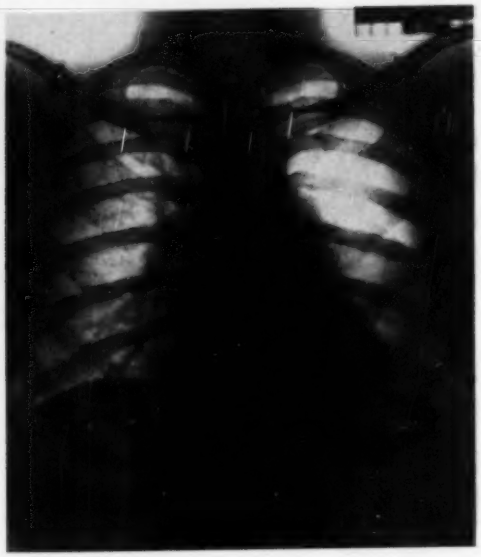

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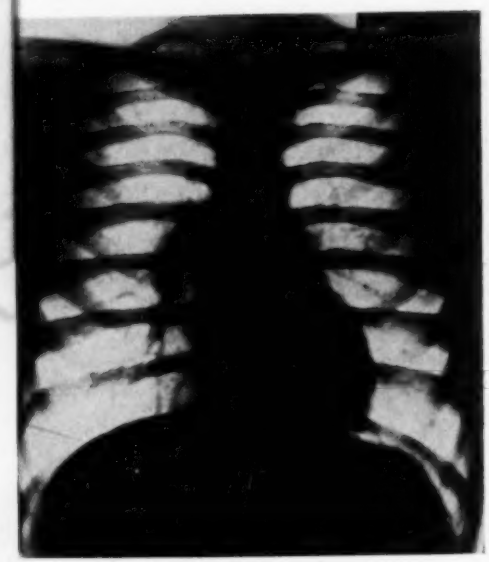

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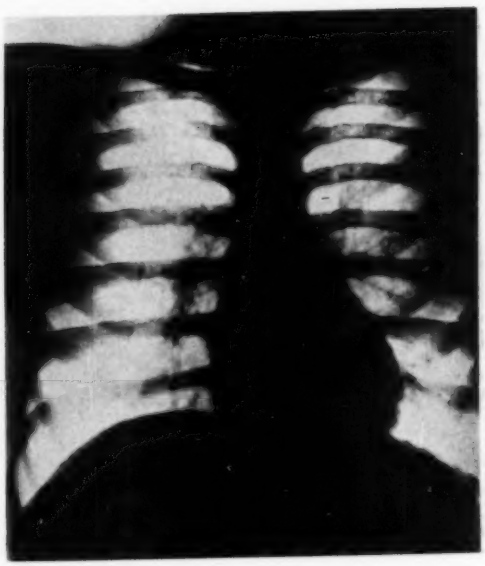

SKIAGRAM 12

streptomycin produces or causes to produce the allergen can it be taken that such a big total dose as 20 or 30 grammes would be necessary, as in a case that I will illustrate presently, to raise the patient's sensitiveness to the threshold of manifesting reaction? It is supposed that the allergen is a histamine like substance. But is it derived from the protein of tuberculin liberated in the circulation by killing the tubercle bacillus? If so, such tuberculo-protein should sensitize the patient much earlier. Because the process of such liberation starts from the very onset of streptomycin treatment, I would like to cite an instance here. You may remember a patient who was demonstrated at one of our scientific meetings recently. After a total dose of 23 gms. of streptomycin this patient developed exfoliative dermatitis. Injection was stopped, anti-histaminic drug given, and dermatitis disappeared. But before resuming streptomycin injections we tried to desensitize the patient by repeated intradermal injection of fractional doses—25 miligrammes, then 50 mgms., then 75 mgms., then 100 mgms.—of streptomycin given at 45 minutes intervals. After this "desensitization" which was done two weeks after the rashes appeared when full doses were resumed. But what happened? After 19 grammes were given the rashes appeared again. If it was the manifestation of hypersensitiveness to streptomycin then why such a big dose as 19 gms. should be required to produce the rashes for the second time? This would indeed be a very strange example of allergy. So all efforts of desensitization proved a failure. I simply changed over to Dihydro-streptomycin and the patient tolerated it well. I may add that his general condition was poor if not very poor. It has been reported that penicillin produces allergy-like reactions even if given in the absence of infection. In such a case evidently there is no bacteriolysis and no histamine liberation. What must then be the mechanism of the allergy? The truth is that there is yet no clear understanding of this phenomenon. The question of toxicology cannot be ruled out.

Result of Treatment

Generally speaking the result was satisfactory. Even without control $^1/_3$ of the cases—far or very far advanced—showed conspicuous improvement.

Moderately advanced—60% considerably improved.

Far advanced—39% considerably improved.

Very far advanced—35% considerably improved.

Temperature—Fever disappeared in 74%. Temperature became normal in 50% within 1st week. Temperature became normal in 28% within 2nd week.

The M.R.C. report is in agreement that a rapid fall of temperature takes place even within the first week.

Weight—Of 167 cases 22 gained 15 lbs. or more. 83 gained 5—15 lbs.

In the M.R.C. report there was not much difference of weight gain between the streptomycin patients and the controls. This might have been due to the fact that the double dose of the drug had lowered the appetite thereby lowering assimilation. But the report makes no mention of this point.

General condition—Marked improvement of general condition ranged from 50% to 67%.

X-Ray results—Much improved 15·3%. Improved 33·3%.

Cavities—101 cases had cavities. Cavity closed in 12%.

Reduction of size or number of cavities took place in 25 per cent. Even fairly large cavities closed or became smaller in size. M.R.C. reports that cavity cases improved considerably in 11 out of 32 cases.

Sputum Results—There were 112 cases with positive sputum. 21 cases were negative by smear. 7 cases were negative by culture, *i.e.*, in 25 per cent conversion took place.

Dosage and Result—Among those who had a total of—

10 gms.	12·5%	considerably	improved.
20 ,,	24%	,,	,,
40 ,,	44·4%	,,	,,
60 ,,	59·3%	,,	,,
80 ,,	57·9%	,,	,,
100 ,,	38·4%	,,	,,

The maximum percentage of improvement was observed upto a certain point. Nothing specially was gained by going beyond 60 or 70 grammes. Most of the improvements took place within the first 2 months if the patient was to improve at all. So if you make a graph you will find that it rose to the peak upto 60 or 70 gms., but fell again even if the total dose was increased. M.R.C. report confirms this experience. But what must be the cause? The M.R.C. investigators found that improvement ceased with the appearance of streptomycin-resistant bacilli. This event took place in the 6th or 7th week. This is of course a very probable cause. But we in India have yet to find the fastness in individual cases by the specialized laboratory technique followed abroad. This is a very important question connected with antibiotic treatment and it is high time that our laboratories took up this work.

Indications

As regards indications our observation fully concurs with the report published by the Expert Committee of the World Health Organisation which I shall read out to you. "It was unanimously agreed that patients with tuberculous meningitis and generalized hæmatogenous or miliary tuberculosis should be given prior consideration, because of the extremely high mortality rate among untreated cases and the lack of any other dependable therapeutic approach.

"It appeared that fulminating types of bronchopneumonic pulmonary tuberculosis of recent origin, which have not progressed beyond the possibility of healing, may frequently be ameliorated by streptomycin,

Residual lesions of a more chronic and destructive character may require other forms of treatment.

"Some of the most distressing complications of pulmonary tuberculosis, especially tuberculous laryngitis and tuberculous enteritis, may be greatly benefited symptomatically by appropriate streptomycin treatment.

"Finally, streptomycin was found to be particularly effective in the treatment of tuberculous sinuses and fistulæ; less favourable results have so far been reported in renal tuberculosis and in tuberculosis of bones, joints and glands."

So the following are the points.

(1) All advanced and far advanced conditions with active or progressive disease with or without cavities where collapse therapy is unsuitable or has failed. (2) As supplementary to thoracoplasty. (3) To render the patient with poor general condition fit for thoracoplasty where this operation is inevitable. (4) Intestinal tuberculosis secondary to pulmonary. I have no experience of streptomycin in primary intestinal tuberculosis. (5) Meningitis. (6) Tuberculous sinuses and fistulæ.

I have given you a short account of our present day knowledge. But more and more investigations are necessary to find out the following points:

(1) To determine the minimum effective dose. Present experience suggests 50-60 gms. (2) To find whether the daily dose can be reduced to ½ gm. (3) Whether one injection per day is sufficient.

The recent American trend is to reduce the period of treatment to even 28 days. Thereby it is hoped to avoid the occurrence of streptomycin resistance.

Consequences of streptomycin resistance in the bacilli are serious. Firstly it limits the period of treatment and secondly when other people are invaded by such bacilli they in turn become unsuitable for streptomycin treatment.

Case Reports

Case 1—S. S., aet. 16, male. This case illustrates the first indication, *viz.*, with active disease where collapse therapy cannot be done. The patient was admitted to the Sanatorium in an acute condition with very highly active disease (Skiagram 1). The picture shows that collapse therapy was contraindicated.

Skiagram taken 5½ months after completion of a 90 gm. course (Skiagram 2) shows the remarkable effect of streptomycin. He is now a walking patient, and is waiting for a partial thoracoplasty to obliterate the cavity in the right upper zone.

Case 2—B. L. G., aet. 29, male, illustrates that streptomycin rendered the patient fit for thoracoplasty which could not be done at the time of admission owing to very poor condition. This is a very interesting case with history of chequered career. Skiagram 3 shows the condition on admission and Skiagram 4 condition after A.P. The adhesions on right side were cauterized. Effusion followed which rapidly changed into pus. Broncho-pleural fistula had developed in the lower zone which was obliterated by phrenicectomy (Skiagrams 5 & 6). Inspite of repeated aspiration the empyema cavity is still patent, because the visceral layer of the pleura is too much thickened to allow the lung to expand. He is now waiting for thoracoplasty.

Case 3—N. L., aet. 25, male, is to illustrate the 4th indication, *viz.*, intestinal tuberculosis secondary to pulmonary. The diagnosis was confirmed by x-ray. Stool examination showed presence of *Ent. histolytica*. So there was intestinal tuberculosis associated with amœbiasis. Skiagram 7 shows lung condition on admission. Skiagram 8 shows an adhesion on left side after A.P. This was cauterized. The contralateral side grew worse after A.P. (Skiagram 9) and there was no improvement of intestinal symptoms excepting that amœba disappeared from stool after a course of emetine and enterovioform. The maximum temperature persisted upto 101°F. At this stage streptomycin was given. Skiagram 10 shows the condition after 90 grammes of streptomycin. The right lung has cleared; he is free from all intestinal symptoms; has gained 82 lbs. in weight; E.S.R. in 10 mm. He is now a walking patient.

Case 4—H. S., male, aet. 20, illustrates the fifth indication, *viz.*, meningitis. Skiagram 11 shows that he had hilar type in the right lung besides meningitis. Streptomycin was given both intrathecally and intramuscularly at the onset of treatment, then intramuscularly upto a total dose of 116 grammes. Skiagram 12 shows that the hilar consolidation has resolved and is almost clear. There are no subjective or objective symptoms.

EPILEPSY*

JACOB CHANDY, M.B., F.R.C.S. (C.), F.A.C.S., M.SC.,

Professor of Neurology & Neurosurgery,
Christian Medical College, Vellore, South India.

Never were more superstitions connected with one disease or symptom complex than epilepsy. References to epilepsy in the ancient Hebrew writings appear in the precepts of sanitary law and associated with superstitions. Early Greeks regarded fits as soul-racking visitations of a divinity. But even Hippocrates scoffed at the idea of a supernatural cause and he recognized both idiopathic and symptomatic forms. The first description of the aura came from Pelops, Master of Galen. The great Arabian Avicenna gave the name Epilepsy from the Greek word meaning "To seize". Many, from time to time, wrote profusely on epilepsy, but in 1870, the classical publication, "Study of Convulsions" by Hughlings Jackson marked the real advance in the knowledge of epilepsy. Much has been learnt from that time about its management and treatment. Yet, one constantly hears the many superstitions of thousands of people of our country about this malady.

* Read at the North Arcot Branch of I.M.A. on the 20th August, 1949.

Careful epileptic surveys have been done in the U.S.A., Canada, England and other countries, and there are on an average one epileptic in every 300 persons. The incidence in our country may be even more than that, and there are probably more than one million people suffering from epilepsy in India.

Epilepsy is a symptom and is due to periodic, abnormal electrical neuronal discharges in the brain producing the physical manifestation of a seizure. These neuronal explosions are due to metabolic or physio-chemical changes in nerve cells, which permit them to fire off. Hypoglycæmia, temporary arrest of blood supply to the brain, scar of the cerebral cortex, brain tumour and similar other conditions bring about this abnormal electrical change.

Such types, where pathological lesions can be found, or due to the action of specific toxic factors, have been called cases of symptomatic epilepsy. The cases, where the cause cannot be found at the present time, are termed idiopathic or cryptogenic epilepsy. As we are learning more and more about epilepsy the latter group is getting smaller. It seems probable that the discharge begins as a local process in the brain, however much the cause may differ. If the cause bringing change to the neuronal activity is diffused or generalized, multiple foci may be seen. Also, the foci may be cortical or deep. It is important to localize the foci and to find the cause which has produced the abnormal activity for the purpose of treatment. Invariably one finds in a careful history of every case of epilepsy, both minor and major attacks. Minor attacks may be so slight as to have been unnoticed by observers. The aura is the beginning of an attack and the occurrence of aura alone is to be regarded as a minor attack.

Idiopathic or Cryptogenic Group

Cases come to this group because no cause is found yet. But there is a strong familial tendency in many cases which suggest an inherited cause, which may be abnormal physiology of cerebral circulation. They have bilaterally synchronous wave and spike abnormalities in the electro-encephalographic studies. Petit mal is considered as a minor attack in this group, which can occur alone or in association with major seizures in which there is immediate loss of consciousness.

Symptomatic Group

After excluding all cases of convulsions due to hypoglycæmia, alkalosis and other metabolic disturbances, there is a fairly large group known as the symptomatic group, due to focal abnormal electrical activity occurring in areas of the brain, near a neoplasm, or due to birth injury, other trauma, febrile thrombosis, congenital malformations, arteriosclerosis or cerebral degenerations.

Our main clinical problems are:

(*i*) to recognize and to give possible definitive treatment to all cases in the symptomatic group.

(*ii*) to treat symptomatically the cases, which in our ignorance, we label idiopathic or cryptogenic epilepsy.

The revelation of an organic cause in cases thought to be idiopathic epilepsy is sufficiently common to suggest that all patients should have the benefit of a complete study early in their epileptic careers.

Investigation of a Case of Epilepsy

History—Careful history-taking is most essential. The age of onset leads rapidly to a presumptive diagnosis of the cause of these seizures. The following table furnishes the clinician with suggestions as to causes, which are most useful, but such an assumption should never be more than hypothetical and these are only the commonest causes of chronic, habitual epilepsy. The acute conditions such as infections and toxæmias that may produce attacks and ones that do not become habitual are not referred to here:

Age of Onset		*Presumptive Cause*
Infancy:	0— 2	Birth injury, degeneration, congenital.
Childhood:	2—10	Birth injury, febrile thrombosis, trauma, cryptogenic.
Adolescence:	10—20	Cryptogenic, trauma.
Young Adult:	20—35	Trauma, neoplasm.
Middle Age:	35—55	Neoplasm, trauma, arteriosclerosis.
Senescence:	55—70	Arteriosclerosis, neoplasm.

A history of progressive neurological deficits should draw attention to an expanding intracranial lesion. Prolonged or difficult birth, difficulty in breathing and feeding, retarded development may indicate cerebral birth trauma. Head injury, even if remote, should suggest the possibility of a meningo-cerebral scar as a cause of seizures.

Description of the Seizure—It is very important to realize that it is the very beginning of the attack that gives clues to the site of the focal lesion which discharges abnormal neuronal electrical potentials. Hughlings Jacksons' astonishingly accurate deduction on cortical localization were based on his studies of the onset of these seizures. The aura is a minor seizure. Most patients have both major and minor seizures and the minor seizures are only the beginning part of the whole major attack.

Every physician, nurse and relative should be schooled to describe accurately the patients' aura and the pattern of attacks.

It is essential to observe the very beginning of an attack since it may rapidly spread from a focal to a generalized convulsion without a localizing pattern. The common patterns of focal attacks are:

(*a*) conscious contraversive, (*b*) unconscious contraversive, (*c*) motor, (*d*) somatosensory, (*e*) masticatory, (*f*) visual, (*g*) auditory, (*h*) olfactory, (*i*) epigastric and (*j*) dream state.

These are illustrated as regards their broad cortical localization in the annexed diagram.

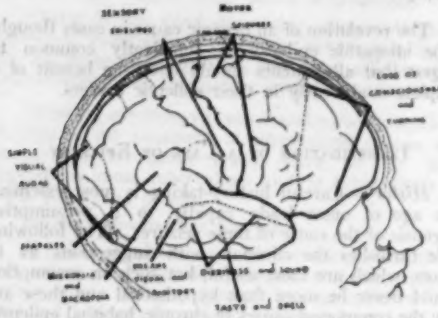

DIAGRAM SHOWING BROAD CORTICAL LOCALISATION OF COMMON PATTERNS OF FOCAL ATTACKS

Complete Physical and Neurological Examination—There is no need to emphasize the necessity for complete physical and neurological examination including ophthalmological studies to detect space-occupying intracranial lesions or metabolic and other general conditions. Rapid examination immediately after an attack may reveal temporary changes in the reflexes or sensibility which point to a focal defect and which cannot be elicited in the interim.

Induced Attacks—It is occasionally necessary to induce an attack in order that the pattern can be determined. This can be accomplished sometimes by:

(*i*) Hyperventilation: attacks may be brought on by having patient hyperventilate until an attack occurs or until carpopedal spasm appears.

(*ii*) Hydration: Hydration of the patient is even more effective. Water is given in large quantities along with repeated injections of pitressin. During this regime vigilant watch should be kept on the patient.

(*iii*) Chemical Method: Careful administration of metrazol intravenously can bring on the attack by activation of the existing epileptogenic focus.

Chemical Studies—Appropriate chemical studies are based on the circumstances under which attacks occur. Spontaneous hypoglycæmia may be suspected if attacks occur during fasting and are preceded by vagueness, anxiety and sweating. Attempts should be made to produce attacks by fasting, to relieve them by administering glucose and to obtain blood sugar determinations during attacks. Glucose tolerance curves should be done at least to five hours. Recurrent latent tetany can precipitate epileptic seizures. Attacks associated with uræmia, cerebral syphilis, vascular hypertension, and cerebral arteriosclerosis are usually recognized by careful routine examination. Carotid sinus reflex mechanism and Stokes-Adam's syndrome should be kept in mind.

Roentgenography—Stereoscopic X-ray films of the skull are very useful. They may show unexpected bony changes or asymmetry of the skull. There may be calcium deposits indicative of tumour, shift of the shadow of the pineal gland due to an atrophic or expanding lesion in one hemisphere or even evidence of increased intracranial pressure.

Pneumography—X-ray visualization of the ventricles and subarachnoid spaces following injection of oxygen into the subarachnoid space has proved an invaluable procedure. Where there is no contra-indication, encephalography is done, the gas being injected by the lumbar route, replacing the spinal fluid. Focal ventricular deformity due to an atrophic or space-occupying lesion, ventricular wandering due to meningocerebral cicatrix, and evidence of porencephalic cysts are all made clear by this method.

Cerebral Angiography—The visualization of the cerebral arteries and veins following injection of radio-opaque substances, as Diodrast, into the carotid artery is of limited usefulness. Aneurysms and vascular tumours are best visualized by this method.

Electro-Encephalography—The principle of this method is that the rhythmic changes of potential of the normal brain can be led off from the surface of the intact scalp, stepped up about one million times by cathode ray amplifiers, and recorded by means of ink writers on a moving strip of paper. Small silver electrodes are fixed to the scalp with collodion in a number of standard locations on each side of the head. These are led off to a switching box which permits simultaneous records to be made from a number of locations. The electrical activity of one side of the brain may be compared with that of the other side, or one small area with another.

Normally, two main rhythms can be recorded from the adult brain. Alpha (Berger) waves appear from the occipital region at a frequency of about 10 per second and beta waves at about 22 per second from the frontal regions.

In epilepsy the normal rhythms are greatly disrupted not only during a seizure but also nearly always during intervals when the patient seems well.

Increased synchronization of brain waves, bilaterally synchronous wave and spike, rhythmic high amplitude discharges, and random spikes which are seen in superficial cortical lesions are some of the usual abnormalties.

The diagnosis of an epileptic attack can usually be made on clinical grounds when a seizure is observed or has been accurately described, but when there is only a vague history of fainting spells or momentary absences, the diagnosis of epilepsy is a precarious one. Electro-encephalography often settles these questions. Often correct diagnoses can be made of epileptic electrical abnormality in the brain in cases of temper tantrums, and fleeting personality changes. Indeed many problems of children have been found to have such electrical abnormalities although they had never suffered from convulsive seizures. From a study of the different electrical patterns it is possible to differentiate and clasify most of the cases of epilepsy.

Localization of the epileptic focus is the main and important function of this study. When this evidence coincides with clinical and pneumographic studies, successful surgical removal of the focus may be possible.

Studying the electrical abnormalities by activating the discharges also give more information. Brain tumours, subdural hæmatomas and a few other conditions can also be diagnosed as space-occupying lesions by these brain-wave studies.

Treatment of Epilepsy

There is no need to mention that the treatment of epilepsy due to space-occupying lesions should be dealt with surgically. All other cases should have proper medical treatment even when some of them may be suitable for surgical treatment.

In the general management of epileptics there are a few simple but essential points which every physician should know and should religiously instruct the patients and their relatives regarding them:

1. Physical exertion and mental excitement tend to increase the electrical activity, and therefore, they should be avoided as much as possible.

2. An adequate amount of sleep is highly essential to ward off attacks. 8 to 10 hours of sleep in 24 hours is considered sufficient.

3. Limitation of fluid intake of the patient helps to raise the threshold for the seizures.

4. It is essential to keep the bowels open and in general to have regular habits.

5. The most important of all is to give the medications very regularly and systematically, not for short periods but for very long periods most often for the rest of their lives. It is highly essential that the patients and their relatives know this fact.

Drugs Generally Used—(*i*) Bromides are used much less now than formerly. They are often not as effective as other drugs. Sufficient doses may give toxic symptoms such as acne, depression of mental activity, and incoordination, thick speech, difficulty in walking and toxic psychosis with delirium, delusions, hallucinations, and coma.

(*ii*) Phenobarbital is a very effective drug and certainly causes fewer toxic manifestations. Large doses can be given and patients tolerate this drug very well. It is also available in soluble form for injections but this preparation contains 10 per cent less anticonvulsive effect.

(*iii*) Dilantin (Sodium 5·5—diphenyl hydantoinate) has already proved its merit and has practically remade the lives of many epileptics. It has a high anti-convulsive power and less hypnotic effect. It is effective in controlling all the different types of seizures except petit mal. It is put up in 0·5 grain and 1·5 grain capsules and doses up to 6 grains can be given per day. It takes about three days of medication to attain an adequate blood level to act as an anticonvulsant. Certain toxic effects are seen with Dilantin such as nystagmus, diplopia, incoordination and skin rash, but they are not troublesome in moderate doses. Hyperplasia of the gums is a frequent effect, which can be kept under control by adequate oral hygiene.

(*iv*) Triodione for petit mal has been found to be very valuable. Mebaral Mesantoin, and other similar drugs are still under trial and have shown some value.

It is often found that combination of these various drugs properly regulated gives the most effective result in preventing seizures.

Surgical Treatment—It is necessary to evaluate the cases that can be benefited by surgical treatment. Cases for surgical treatment should fulfil the following criteria:

1. Attack pattern, E.E.G. and pneumo-encephalographic abnormality, all point to the same region.

2. Single focus, and not multiple or diffuse abnormality.

3. The focus is in an area which can be excised without increasing the neurological deficit.

4. When attacks are not controlled with medication and large enough to interfere with activity.

5. Normal mental endowment.

The usual operative procedure consists of electrocorticogram, identification and mapping of the central region by electrical stimulation, reproduction of aura by stimulation, and meticulous excision of the focus. The pathological lesions commonly found are meningocerebral or cerebral cicatrix, focal atrophy of part of one convolution, microgyri, which may be focal or extending over a lobe of the brain, cerebral cysts and hæmangiomatous lesions, which may show both atrophy and expansion.

The results of the operation have been complete stoppge of seizures in one-third; much fewer seizures in one-third and in the other third no improvement.

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HOME TREATMENT OF SCHIZOPHRENIA BY INSULIN SHOCK *

CHARU CHANDRA SAHA, M.SC., M.B., D.T.M. (CAL.), F.R.F.P. & S. (GLAS.), M.R.C.P. (LOND.),

Additional Visiting Physician, Clinic for Neurology and Psychiatry Medical College, Hospitals, Calcutta, Physician, R. G. Kar (Carmichael) Medical College Hospitals, Calcutta

Introduction

Psychiatry has made great advancements, no doubt in the recent years, but has it been able to expel the sense of mysticism from the minds of the general physicians, not to speak of the lay public? Has it been able to bring it to a true scientific basis? If the etiology of a case is asked, mysticism prevails—spirits and ghosts, mental shock and worries, physical ailments, etc. If the clinical picture is studied, no two cases are alike, mysticism again. If treatment is asked, different methods are there—suggestion, medical and religious hypnotism, psychoanalysis or physical methods—there is some mysticism in each. It is our endeavour, therefore, to get out of the clutches of mysticism and land into the realm of scientific experimentation and naked truth—demonstration.

Necessity for Home Treatment

To arrange for home treatment is necessary for three reasons:—

Firstly, there is no arrangement for indoor treatment at Government or any public institution.

Secondly many patients or their guardians do not want to put themselves or their wards into a mental hospital as that may bring a stigma on the family and social difficulties in future.

Thirdly, some patients, who still retain sufficient sense, will not agree to go and live in a mental hospital with lunatics.

Etiological Considerations

The treatment of any disorder can be rationally arranged if the etiology is known. In case of mental disorders, however, the etiology is so diverse and complex that different workers looking at it from different angles arrive at different conclusions at the same time and in the same case. The truth lies in a combination of three factors—constitutional, physical and mental in different proportions.

The constitutional factor is what is inherited by the individual and acquired by him in childhood from his environments.

The physical factor consists of the various physical ailments, trauma (head injury), chronic hepatitis, kala-azar, chronic malaria, hypertension, use of some drugs like mepacrine which bring forth a mental breakdown in a previously well-adjusted individual.

The mental factor again consists of the different mental worries about himself or his family, pecuniary worries, mental shocks like death or unfaithfulness of friend or marital partner. Earthquake, fire, famine, aerial bombing etc., producing epidemic mental breakdown also fall under this category.

To do the rational treatment, therefore our first aim should be to make him free from his physical and mental difficulties. I like to mention here that several cases of schizophrenic reaction types were found to be suffering from chronic hepatitis, K.A. and chronic malaria at the same time and the treatment of these physical troubles not only relieved them physically but also adjusted them mentallly. Similarly, when there are difficulties at home, removal from the environment alone, managed to mentally adjust the individuals concerned.

Shock Therapy

But there are cases, where such physical ailments are not present, mental difficulties are also absent or cannot be adjusted, nor can they be reached psychoanalytically and it is merely the question of some special treatment that has to be considered for the purpose. Various methods, continuous narcosis, pyrotherapy and other physical means have been tried. The most recent are the three forms of shock therapy—insulin, cardiazol and electric convulsion. We know that physical and mental shocks can poduce mental disorders. The question is whether countershocks can bring back the normal condition. I give you some examples from literature here: (1) A mentally disordered person was traversing a field were a game of hockey was going on. Suddenly the ball struck against his head and he fell down unconscious; when he regained consciousness after 48 hours, it was found that his mental condition was normal. (2) A man was paralysed (no organic lesion was there for two years) and was in bed; when all methods failed, his wife was advised to arouse suspicion in his mind about herself; when such a field was created, one night the doctor remained at their house, he was in the ground floor and the patient on the first floor. At night, the wife came downstairs and began to talk with the doctor so that the patient full of suspicion could walk downstairs to see what they were doing.

Many more instances could be given. With this idea in view the shock treatments have been promulgated with good results in many cases, though the

* Read at the Silver Jubilee Session of the All-India Medical Conference in Calcutta, Dec. 1948.

rationality has not beeen proved. Out of the three principal methods, insulin shock is easiest to control as it can be terminated by glucose injection, there is little chance of fracture or dislocation and the result is best.

Selection of Cases for Insulin Shock.—Early schizophrenics (within 1 year) are the best. Those with acute onset give better result than those with insidious onset. Lastly those who were well adjusted before respond better than the shy, autistic introvert. Hebephrenics do not react well.

Technique.—The main principle underlying the treatment lies in the administration of gradually increasing doses of insulin to the starving patient until he passes each day into coma, terminated about one and half hour after. The number of comas varies roughly between forty and sixty.

Risks.—Rarely death occurs from irreversible coma, cardiac failure, aspiration pneumonia, etc.

Modifications done for treatment at home—

1. Thorough physical examination before treatment.
   (*i*) Clinical examination.
   (*ii*) Electrocardiographic examination.
   (*iii*) Urine examination.
   (*iv*) Blood examination.

Any cardiac damage, kidney or liver disease, tuberculosis or debilitating condition should be avoided.

2. Intravenous route is used—intravenous injection produces hypoglycæmia in half an hour which becomes maximum in an hour and the action may pass off in another half to one hour. This produces sudden shock to the brain as in the case of the hockey ball about which I have already referred to.

3. Doses are increased very cautiously—5 to 10 units daily.

4. The coma is terminated half an hour after it appears.

5. The patient is attended personally by the psychiatrist with an assistant throughout the period, thus irreversible coma is avoided.

6. An attempt is made to know the difficulties of the patient and to adjust him as soon as a clear brain is found just after coma.

7. A change of environment to happier atmosphere for at least 3 months is recommended after the course is over.

Results—It has been difficult to assess the result of insulin shock for two reasons—

(*i*) Some workers take a wider view of schizophrenia whereas others take only a restricted view about it in diagnosis.

(*ii*) Spontaneous intermissions.

Statistics of 40 cases done by the writer—

1. 15 cases have completely recovered—no relapse.

2. 10 cases have recovered but some eccentricity is left.

They are however doing their usual daily duties. These two groups form 62·5 per cent.

3. Improvement in 10 cases—these were generally cases of several years' duration with dementia—they were naked, talking to themselves, wanting to go out but they could be made to live under supervision and themselves managing personal necessities—25 per cent.

4. In two cases—no improvement.

In two cases coma could not be produced even by injecting 250 units intravenously after starvation for 12 hours.

One case recovered completely after 10 subcomatose doses, but on continuing 3 more increasing doses, he had a relapse and did not recover. So totally 5 cases had no improvement—12·5 per cent.

How Insulin Acts—Though many hypotheses have been put forward to explain the modus operandi of insulin in schizophrenia, yet we are still not in a position to explain the real nature. Some of them are:

(*i*) Sakel's view—it acts on the nerve cells and hormones exciting the activity of the vegetative centres.

(*ii*) Interference with brain tissue respiration.

(*iii*) Production of disturbance in the autonomic nervous system.

(*iv*) Psychological view—death and rebirth.

(*v*) Restoration of inhibited conditioned reflexes—this has been shown experimentally in rats and applied to man.

Whatever the theories may be, the fact remains that insulin produces hypoglycæmia and relieves schizophrenia but the results in schizophrenia are not in correlation with the former. In two cases: hypoglycæmia came upto 0·03 per cent blood sugar—one of them did not recover.

Conclusion

In conclusion, I want to put before you that there is no mysticism in insulin shock therapy and if you follow the above mentioned technique in well selected cases you will also get the mystic result and find yourself the magician capable of playing the trick.

We must not however be satisfied with the present position but try to find out the rationality of the treatment and eliminate the time factor.

DIARRHOEAS IN THE TROPICS—ETIOLOGICAL ASPECT

GOPAL CHANDRA KANJILAL

Mahendru, Patna

The term diarrhoea has been very appropriately defined by Roux as too rapid evacuation of too fluid stools. The one essential factor is the abnormal rapid passage of the food residue through the alimentary canal, though mucus and blood in some form may be the accompaniments. With the above picture before us when we think about the etiological aspect a good many factors come there in the causation of diarrhœas as such but that is limited and concentrated to only a few when we also limit our attention to the subject as we get in the tropics.

Diarrhoea is an accompaniment of almost all the diseases in some form or other so that there is no idea in discussing it as a condition only of the tropical countries. However, there are certain diseases more prevailing in the tropics which as a rule include diarrhœa.

There are two forms of diarrhœa depending on the acuteness and chronicity of the condition. The acute form may arise as such when it is called primary, or be an acute exacerbation of some chronic condition or may be the effect of some systemic condition to which the name of secondary is given. Again whether acute or chronic, there are certain definite predisposing factors. Strictly speaking the acute diarrhoeas is not a feature of the tropics alone, though the chronic ones may be said to be so, for most conditions as we see are more prevailing there. But still certain factors in the predisposition or causation of acute diarrhœa can be held more responsible in the tropics as they are rather commonly associated with the habit and economic condition of the people in general.

Predisposing Factors

They are:

(1) *Climatic influences*—Sudden chill or heat-stroke having its effect on the body surface induces an intestinal hypermotility and may predispose the susceptible patients to an attack. Sometimes chill may follow sleeping under a fan or *punkha* during the hot weather. Again it has been observed that during summer when the body is over-heated and perspiration is profuse, the drinking of large quantities of ice-cold liquid is followed by symptoms suggestive of enteritis.

(2) *Altitude*—That the altitude plays some part in the predisposition is evident from the condition, hill-diarrhœa. This is met with in those, chiefly Europeans on their going to the hills after living in the tropical low-lands. The diarrhœa tends to occur chiefly in the early morning, the stools being copious, pale and frothy. There is much flatulence and distension. The cause of this is still undetermined. That there is something to account in the water may be suggested.

(3) *Deficiency states*—The economic condition of the people is mostly to account for this and we see most cases in the poor families who can hardly think of ever having a balanced dietary composed of due proteins and vitamins. Vitamin deficiency, hypoproteinæmia and severe anæmias may act by rendering the gastrointestinal mucous membrane more susceptible to the inroads of infection and more liable to insult from other irritants.

(4) *Achlorhydria*—It is a predisposing cause of chronic enteritis and it may render such subjects more susceptible to acute inflammatory changes in the intestine following exposure to intestinal irritants. In the tropics diseases which give rise to achylia or achlorhydria are severe anæmia, pernicious anæmia, hookworm infestation, alcoholic gastritis.

Primary Causes of Acute Diarrhoeas

They are usually of toxic, dietary or infectious in origin. Gastro-intestinal allergy is a frequent cause. The taking of some article of food gives rise to allergic manifestation as in the form of urticaria around the mouth. But there are great many variations, *e.g.*, warm milk may bring on the symptoms whenever taken whereas cold milk does not. Food as unripe, overripe or decomposing fruits or large amount of cellulose, too much raw vegetable food, meat which has been long in store and undergone decomposition may cause acute inflammation of the small intestine of susceptible subjects. The vessels in which the food has been contained and cooked also have much to account for. The use of aluminium utensils for cooking has been questioned from time to time. Collapse and many of the symptoms of cholera are produced by food cooked in a new copper vessel. Condiments, highly spiced food, particularly chillies and food roughages cause acute diarrhœa due to their mechanical irritation. Excessive indulgence in alcoholic beverages is a very common cause. Some persons suffer an attack of acute gastroenteritis each time fermented drinks are taken freely. Addiction to alcohol leads to chronic gastritis and finally to achlorhydia which may result in chronic diarrhœa. The quality of water is often responsible for diarrhœa, acute or chronic. This is frequently the case in malarial districts in the summer and autumn specially when the temperature is high. Soft water containing much peat from the mountains may also cause diarrhœa. The most common infections causing diarrhœa from the use of spoiled foods are due to salmonella group of organisms particularly bacillus Enteritidis of Gartner and Bac. Aertrycke, colon bacilli, Bac. Botulinus, etc. Stapylo. aureus and its toxins can cause acute outbreaks of gastroenteritis even as an epidemic. Virus infections may play an important role in certain epidemics. In the cases mentioned above diarrhœa is caused by the presence in the food of excess of the mechanical and chemical stimulants of intestinal activities together with bacterial infection of

the intestine. The use of certain medicines lead to acute diarrhœas:—

(1) Use of drastic cathartics or the habit of taking aperients either in excess of what is required for the correction of chronic constipation or even when the bowels left to themselves would act quite normally.

(2) Diarrhœa with antimony treatment in kala-azar, which is a reaction of overdosage.

(3) E.B.I. treatment in amœbic dysentery. The emetine set free in the intestine acts as an irritant.

(4) Other drugs too which bring on diarrhœa, *e.g.*—As, Pb, Hg.

Secondary Causes or Constitutional Causes of Acute Diarrhoea

Any of the infectious diseases may cause severe inflammatory changes in the stomach and intestines as in typhoid fever, dysenteries, cholera, measles, influenza, severe pyæmias and septicæmias. This is caused by the excretion of toxic materials from the blood stream through the intestinal walls.

Causes of Chronic Diarrhoeas

By chronic diarrhœas we mean those which persist long enough to be termed chronic and diarrhœa which is intermittent or remittent. Ryle's anatomic classification of causes based upon the origin as in the stomach, intestine and so on still holds good, but there we see the causes are not strictly confined to the part in question. The etiological aspect of chronic diarrhœas in the tropics can be discussed under the following headings:—

A. *Protozoal diseases*—(*a*) Amœbic dysentery. Causative organism *Ent. histolytica.* Onset may be insidious commencing with an afebrile diarrhœa or may be acute with acute diarrhœa only. There may be diarrhœa alternating with constipation. Stools rarely more than 12, usually much less. The vegetative entamœbæ lie on the tissue of bowel wall, enter crypts of Lieberkuhn, secrete cytolysins and invade submucosa. This produces local necrosis, abscess formation and flask-shaped ulcers which discharge mucus and blood. The incidence is probably co-related with bad sanitation. In the tropics it is specially prevalent in India, Indo-China, China, Phillippines, N. & C. Africa, South U.S.A., Central and South America, West Indies.

(*b*) Flagellate diarrhœa. Three common intestinal flagellates are giardia intestinalis, which inhabit the upper intestine, the trichomonas hominis and chilomastix mesnili found in the cæcum and colon. They never cause ulceration nor hæmorrhage. Hyperinfection may lead to surface irritation resulting in catarrhal enteritis. Extremely common in the tropics.

(*c*) Blantidiasis. Blantidium coli is the causative factor. It produces ulcerative condition of the colon just like amœbic ulcers. Symptoms closely resemble those of amœbic dysentery usually chronic and diarrhœic. Prevalent in China, Andaman, Egypt, Sudan, and Brazil, etc.

(*d*) Kala-azar-diarrhœa. It may be a symptom or a complication. There is a good appetite with poor digestion which itself may lead to intermittent diarrhœa. K.A. dysentery due to L.D. bodies in the intestine may be another mode of production. India (eastern part), China, South Sudan, Congo, W. Abyssinia, etc. are the places of occurrence.

(*e*) Malaria. In the bilious remittent fever associated with bilious vomiting, bilious diarrhœa may be met with. Again in choleraic form of pernicious attack, there is profuse diarrhœa with collapse simulating cholera. Intestinal sporulation and clumping of corpuscles causing plugging of the visceral capillaries in the intestines is responsible for these pernicious symptoms. The subtertian form of malaria is dominant throughout tropical W. & C. Africa and has a restricted distribution in the planes of C. & S. India, the Dooars and the Himalayan foot hills, South Malaya, Dutch East Indies, etc.

(*f*) *Intestinal Coccidiosis.* Mild form of mucoid diarrhœa caused by Isoporahominis found in Near East and Dutch East Indies mostly.

B. *Helminthic infections*—(*a*) Ascariasis. It is a disease of insanitation—an infection of the alimentary tract mostly small intestine by ascaris lumbricoidis. Adult worms may produce symptoms by toxic, reflex or mechanical means. Reflex dyspnœa, abdominal pain and diarrhœa with or without blood may occur (ascaris dysentery) while masses of coiled up worms sometimes produce acute intestinal obstruction. Common in China, India and Pacific Islands.

(*b*) Ankylostomiasis. Wide-spread in tropical and sub-tropical countries. In the stage of deposition alternate constipation and diarrhœa may be due to absorption of toxins or mechanical. In the terminal stages when there is advanced anæmia and œdema, the bowel wall is extremely susceptible to inflammation; terminal diarrhœa with passage of mucus and sometime blood is noticed.

(*c*) Trichuriasis—It is caused by T. Trichiura and produces no special symptoms. Some claim it causes diarrhœa—cause is mechanical.

(*d*) Trichiniasis. In the stage of invasion symptoms resemble cholera and dysentery with hyperpyrexia—cause is mechanical during the migration of

Trichinella spiralis from the human intestine to the muscles.

(*e*) Dracontiasis. Guinea-worm disease caused by Dracunculus medinensis, common in India, Persia and Africa. The prodromal symptoms may be associated with vasomotor collapse, vomiting, diarrhœa, dyspnœa and high eosinophilia, etc. The manifestations are allergic in nature. Extracts of worms when injected have been seen to give rise to similar symptoms.

(*f*) Strongyloides stercoralis infection. In large numbers the worms probably cause irritation of bowel and diarrhœa, abdominal pains and flatulence.

(*g*) Filariasis. It causes chylous diarrhœa due to the effect of mechanical obstruction and helminthic toxins. Secondary streptococcal infection may play some part.

(*h*) Œsophagostomiasis. In man occurs in North Nigeria. Produces dysentery-like symptoms—mechanical cause due to Œsophagostomum apiostomum.

(*i*) Intestinal Tæniasis. Organisms are Tæniasolium, saginata—Dipylidium caninum, Hymenolepis nana, D. latus, etc. Gastro-intestinal disturbances such as anorexia, dyspepsia, abdominal pain, colic and diarrhœa may result.

(*j*) Intestinal bilharziasis. It is due to schistosoma mansoni, common in Egypt, Central Africa, and Nyasaland. In toxic or anaphylactoid stage as well as in the stage of localisation diarrhœa, dysentery, tenesmus, sometimes choleraic diarrhœa is seen.

(*k*) Fascioliasis. F. buskii inhabits the small intestine, particularly duodenum producing focal lesions. Symptoms include hypogastric pain, alternate constipation and diarrhœa. Seen in China, India (Assam), Malaya, Sumatra, Borneo, etc.

(*l*) Clonorchiasis—due to C. sinensis. Seen in Far East, India, Mauritius, etc. Heavier infections lead to chronic diarrhœa.

(*m*) Heterophyidiasis—due to H. heterophyes. In severe infections digestive disturbances and diarrhœa with blood in the stools. Seen in Egypt, China, etc.

(*n*) Paragonimiasis. Abdominal symptoms with involvement of the intestine by P. westermanii results in diarrhœa. Endemically seen in the far east.

C. *Bacterial diseases*—(*a*) Bacillary dysentery. Infection of mucosa of large intestine by specific dys. bacilli Shiga, Sonne, Flexner, Schmitz. Shiga's bacillus is the most virulent one. Inflammation and toxic necrosis of mucosa of large intestine is the cause of diarrhœa. At first there is diarrhœa, then blood and mucus, small in amount uncountable in number with pain and straining. Red-currant-jelly stool is characteristic. In most acute and fulminating cases the large proportion of dark blood makes them resemble "meat-washings". Causes predisposing to bacillary dysentery are physical exertion, unsuitable dietary, exposure, malaria, tuberculosis, scurvy and enteric fevers, etc.

(*b*) Enteric group of fevers. Causative factors are B. typhosus, B. para A. B. & C. The organisms enter the Peyer's patches and solitary lymph follices causing necrosis, sloughing, ulceration, then bacillæmia persisting longer in typhoid than in paratyphoid. Diarrhœa from commencement or alternating with constipation.

(*c*) Cholera. It is a water-borne infection, organism is V. Cholera (comma bacillus) which multiplies in small intestine where endotoxin is liberated. Onset is sudden or supervenes in course of mild premonitory diarrhœa; profuse watery stools soon become rice-water containing muooid flocculi, then vomiting of rice-water material. The diarrhœa is painless. Cholera is endemically existing in India and Rogers has demonstrated three main epidemic foci from which epidemics spread in the spring and summer through movements of pilgrims who acquired the disease from infected water. Deficient rainfall results in scanty and bad water supplies and generally precedes epidemics in India. Herding of people in famine and refugee camps also favours outbreaks.

(*d*) Leprosy. In the prodromal stage progressive weakness, dyspepsia, diarrhœa or constipation is noticed.

D. *Nutritional diseases*—(*a*) Pellagra. Dermatitis, diarrhœa and dementia are the three D's we remember in the diagnosis of this condition which is caused by deficiency of vit. B (p.p.) (nicotinic acid) and certain proteins. It occurs particularly amongst maize eaters and in poorer communities living on cereals containing a low protein content or protein of low biological value. In alcoholic pellagra chronic gastritis resulting from beverages is the cause of diarrhœa. Again in pellagra we find constant hypochlorhydria and often achlorhydria, thus predisposing to diarrhœa. The secondary anæmia is also a factor.

(*b*) Sprue. The initial cause is still obscure, dietetic cause suggested is probably viatmin B_2 complex deficiency. There is damage to absorptive surface of small intestine resulting in interference with normal absorption specially fats. Three cardinal symptoms, glossitis, meteorism and diarrhœa. Diarrhœa in early morning sometimes nocturnal may be watery, frothy, copious, containing undigested particles but always offensive and accompanied by flatulence.

(*c*) Scurvy. It is due to deficiency of vitamin C which is a physiological cell-tonic. Conditions in which scurvy develops often favour the production of a dyspeptic type of diarrhœa with sanguinous discharge.

E. *Virus diseases*—(*a*) Phlebotomous fever. An acute specific fever lasting about three days due to a filtrable virus which spread by phlebotomus Papatasii.

Diarrhœa may occur in the course of the disease. The pathology is inadequately studied. In the tropical zone may occur at any time. N.W. India, S. China, Java, etc. are the places where the condition is prevalent.

(*b*) Yellow fever. Endemic in parts of tropical America and W. Africa it is caused by a filtrable virus and transmitted to man by a common domestic mosquito *Ædes egypti*. As yet India is free from this scourge due to the strict preventive measures which are in vogue. In the period of calm, diarrhœa is a feature observed.

F. *Spirochætal diseases*—(*a*) Relapsing fever. A group of specific infectious fever due to trepanomata and spread by lice or tics characterised by a variable number of febrile relapses. Diarrhœa is due to toxæmin. India, China, N. W. Africa are the places where the disease occurs.

(*b*) Leptospira icterohæmorrhagiæ infection. The onset is with rigor, vomiting, headache and diarrhœa. Of the tropics seen in W. Africa, Congo, N. Africa, Egypt, Abyssinia, Andaman Islands, Malaya, Dutch East Indies, etc. It is characterised by a severe fever with jaundice and liver enlargement specially seen in sewer workers. It is very common in Japan.

G. *Metazoal disease*—Intestinal myiasis. Fly larva are common in human fæces, sometimes they originate from the intestine, the eggs being swallowed by man in food. Gastrointestinal symptoms include diarrhœa may be mild or severe. It is a very rare condition.

H. *Miscellaneous conditions*—(*a*) Fish poisoning. Certain poisonous fishes are found in Japanese waters which when taken cause symptoms of acute gastroenteritis. Numerous epidemics of food poisoning have been due to eating fish. This is due to contamination of fish with bacteria of food poisoning organisms, the toxins may not be destroyed clinically by cooking. Shell fish, molluscs, oysters, lobsters, crabs, etc. have frequently caused severe attacks of food poisoning.

(*b*) Chiufa. An acute inflammation of rectum, commencing at the anus and extending upwards, later involving the colon. The disease is seen in North Rhodesia, cause is unknown. When colon is involved diarrhœa and vomiting may occur.

Statistics taken by Ryle in England in the year 1924 and that of cases occurring in Philadelphia at the present time show that the diarrhœa of psychogenic and neurogenic origin and that due to chronic ulcerative colitis and colonic carcinoma are certainly increasing in incidence in recent years. In temperate climate amœbic colitis and bacillary dysentery are relatively rare. But when we look to the etiological aspect of diarrhœas in the tropics and specially in India, it is evident that protozoal diseases, helminthic diseases and bacterial infections are decidedly the foremost causative factors.

A FEW OBSERVATIONS ON EPIDEMIC KERATO-CONJUNCTIVITIS*

B. N. BHADURI, M.B.,
Professor of Ophthalmology, R. G. Kar Medical College, Calcutta.

Although the disease was noted as early as 1889 by Fuchs, Adler and Von Reuss and in 1890 by Von Stellwag, the advent in epidemic form in India at the beginning of the present century and almost all over Asia, Europe and America in the course of last quarter of a century led to the publication of many papers on the subject.

It is not intended here to summarize the literature as it has been done by many authors exhaustively specially by Rados (1944).

There are many controversial points discussed by different observers, chief amongst them is the causative nature of the disease. The virus origin of the epidemic suggested itself due to the absence of characteristic and constant bacteriologic features. At the beginning it was mere speculative but in 1918 Grueter successfully demonstrated the transmisibility of corneal herpes and concluded that one type—the virulent one is responsible for dendritic keratitis and the other the less virulent one for superficial punctate, vesicular, and disciform varieties of the disease and also for recurrent corneal erosions (Rados, *loc. cit.*).

He was supported by Sulzmann and others. But Zur Nedden, Meissner and others denied the existence of any relation between superficial keratitis and herpes, though most of them accepted the virus causation of the disease.

In 1942 the controversy was set at rest by the work of Sanders who established the virus nature of the disease. In their experimental studies, Sanders and Alexander in 1943 successfully isolated the virus from the blood of two patients. At the beginning the virus was maintained by inoculation of tissue culture with conjunctival scrapings and by mouse passage. Later he successfully inoculated human subject and demonstrated the presence of specific antibodies. According to them, the virus easily passes through E. K. Seitz filters and all grades of Berkefeld filters and is pathognomic for unweaned white Swiss mice, when injected intravenously, intraperitoneally and intrathecally and for rabbits only when given intrathecally.

In 1933 our own attempts to inoculate seven rabbits with materials from human subject was unsuccessful except in one eye. The punctuate corneal lesions in the particular eye disappeared in course of ten days and did not show characteristics of the disease. The clinical characteristics has also been the cause of controversy in some publications due to Dimmer's observation in 4 cases of corneal disturbance in 1905

* Read at the Silver Jubilee Session of All-India Medical Conference, Calcutta, Dec. 1948.

which differed from the observation of Fuchs. The corneal infiltrations are much larger in size and fewer in number and took long to disappear. They were called nummular keratitis of Dimmer. In 1934, Sulzmann from his observations on 88 cases, concluded that superficial punctate keratitis and nummular keratitis differ only quantitatively.

The question whether superficial punctate keratitis and nummular keratitis are two varieties of the same disease or are distinct diseases has not yet been solved. In 1944, Rados after an exhaustive analysis of all previous publications suggested the explanation that either the same virus causes clinically similar but not identical lesions or the epidemic is caused by two different viruses or by a virus and an attenuated form. In 1946, Woods reported 5 isolated sporadic cases all of which possessed the classic picture of nummular infiltrates in the cornea and had serologic or allergic evidence of brucellosis. He produced typical nummular keratitis in rabbits by inoculation with Brucella organism.

In our own series of cases there are at least six instances, where the disease started as typical cases of epidemic keratoconjunctivitis with 50 or more spots in the cornea of less than 1 mm. diameter. The conjunctival signs disappeared in course of two weeks, the corneal remaining quiescent and after the end of third or fourth week, nummular type of lesions appeared with marked ciliary and conjunctival congestion. The conjunctival signs which reappeared, passed off in course of 3 to 4 weeks, but the nummular lesions in the cornea required 2 to 6 years for complete absorption. From the history of the case only in one the second attack followed the resumption of washing the eye with cold water. These cases were watched till their total recovery and it has been observed that during the period neither there was any recurrence nor any vascularization in the cornea.

The above clinical observation does not prove that both epidemic keratitis and nummular keratitis may be caused by the same virus nor does it disprove the suggestion that the primary virus infection makes the eye susceptible to other infections, *e.g.*, brucellosis which have been proved to have caused nummular type of corneal lesions. It might be mentioned here that in 4 of the 6 cases, corneal infiltrations during the second phase have been particularly heavy almost occupying the whole of the cornea, in some places overlapping one over the other mostly in circular shape and the size varying from 0·5 to 4·0 mm. in diameter. During the course of absorption the granular character of the disc is visible. There is very slight depression of the surface which is noticeable in the cases with extensive lesion. These six cases are all monocular and in all of them the other eye remained unaffected during the period of observation lasting several years. The facets which have been recorded by Aust and others were found to disappear in course of time.

From the epidemics in Germany and in America it strikes one that in sporadic cases and in mild epidemics the disease is common amongst farmers. Woods' publication of the nummular type of corneal infiltration in Brucella infection led me to go over the old records of 1931 epidemic (first of its kind in Bengal) of Calcutta in R. G. Kar Hospital. Previous observers Kirwan, Sanyal and others noted that the outbreak of the epidemic started from July, 1931. We find 16 cases in June, 18 cases in May, 3 cases in April and 1 case in March. The case history of the last one, *i.e.*, of March 1931 is as follows:

Sk. Jeman came to the out-patient department on 17th of March with typical signs of keratoconjunctivitis in the right eye following the application of some counter-irritant on his forehead for frontal headache. The April cases are diagnosed as monocular conjunctivitis on the first day of third visit and subsequently diagnosis was changed to superficial punctate keratitis. In July the number of cases increased to 37.

From the addresses noted, we find that the disease started first in North Calcutta area. All cases of April, May and June were from North Calcutta and 30 out of 37 cases of July also belonged to North Calcutta.

The other hospitals of Calcutta recorded the disease from July and this led one to conclude that the epidemic started in North Calcutta and then spread over other areas.

Due to the work of Improvement Trust the topography of North Calcutta has changed enormously. In 1930, there was a large number of cow, ox and buffalo sheds and a few horse stables in North Calcutta.

Then from the records of the addresses of the patients noted in the tickets, it was found that 90 of the first 100 patients were residing either in houses, huts or slums which were located in the same compound or very close to cow, ox or buffalo sheds.

This relation seems to be of some significance. It has been observed that not only the first epidemic but the subsequent ones usually started at the beginning of rainy season. The average rainfall of Calcutta is 60 inches. The monsoon showers usually begin in the third week of June but earlier short north-western comes with short and sharp showers in April and May. About 35 to 40 inches of rain are recorded in July, August and September. It would not be out of place here to record that the rainfall in 1931 was more than average.

From this it seems that the rains, mud and cow-dung have some influence on the growth of the virus and the spread of the infection in Calcutta epidemic of 1931. Some observers previously drew the attention to mud in rice fields and the appearance of epidemics in Ceylon and in Java.

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The incidence as recorded in 1931, the first year of the epidemic, in the outpatient department of Carmichael Medical College Hospitals (now known as R. G. Kar Medical College Hospitals) is as follows:

Total number of cases of epidemic keratoconjunctivitis is 516 of which 380 are typical and in 136 there is marked conjunctival signs in 100 cases and in 36, the corneal infiltrations were regarded as atypical. Private cases (from July to December, 1931) of epidemic keratoconjunctivitis 80.

Total number of cases considered in this paper is 596.

Clinical characteristics. In Calcutta epidemics, uniocular involvement was the rule and in the present series there were only 3 bilateral cases.

The swelling of the upper eyelid was almost a constant sign and the enlargement of the preauricular gland was observed in 60 per cent of the cases in the hospital series of 516. It might be mentioned here that the records are incomplete to note this point as some of the doctors preferred to depend on corneal signs for the diagnosis. In my private cases—80 of my own which are included in the series, about 80 per cent of the cases had enlarged and sometimes tender preauricular gland. The enlargement of the preauricular gland varied generally in the present series with severity of conjunctival changes whereas tenderness of the gland on the region had no such relation. In 3 cases in this series, sublingual gland was found to be enlarged and in all of them, a slight rise of temperature with a general feeling of malaise was observed. In one of these three, submaxillary gland was also enlarged and in the particular case, the temperature was 101·0°F. In all the three corneal signs were typical.

Marked congestion of the conjunctiva was noted in 80 per cent of the cases and in nearly every one of them, the conjunctival congestion was more prominent in the lower palpebral. The lateral half of the lower palpebral is more involved than the medial. The chemosis is noted in many but mostly confined to the lateral part of the interpalpebral region and in some in the lower part. In about 15 per cent of the cases, the conjunctival congestion is limited to a mild flush and in them the corneal changes are fairly marked. The corneal spots in them are usually smaller in size (0·50 mm. or less).

The lymphatic reactions in the conjunctiva was hardly noticeable in the early months of the epidemic (15 cases in 300). Later on the number increased and in subsequent epidemics it was of frequent occurrence. It was usually seen in the lateral half of the lower palpebral conjunctiva but in some the upper tarsal was noted to be involved. Small subconjunctival hæmorrhages were noted in a few cases; subcutaneous haemorrhages were not seen in the series and the pseudomembrane referred to by Hagen in some American epidemics was not seen in the first epidemic.

In fact in Calcutta epidemics, the conjunctival signs seemed to be milder in comparison with the observations recorded in America and Germany. The observation of Herbert in Bombay, Kirkpatrick and Wright in Madras, have also shown that the conjunctival changes were not severe in other parts of India.

Is it due to poor nutrition of the Indian patient or due to the less virulent strain of the virus responsible for the epidemics in India?

It is well known that in Bengal, it is extremely rare to find cases of trachoma (a disease said to be due to virus infection) of severe intensity like those commonly seen in Northern India. Both vascular and lymphatic reactions of the conjunctiva is much less in trachoma in this part of the country and the incidence of the disease is very low. Referring to our series it can be roughly generalized that the cases with heavy corneal infiltrations usually started with moderate conjunctival congestion and those with more intense reactions in the same tissue were usually cases with much less corneal lesions. In some the conjunctival reactions were so mild and corneal signs so glaring that the patients would deny the appearance of any redness; the chief complaints in such cases were dimness of vision and photophobia. The photophobia was usually present from the very beginning before the commencement of corneal infiltrations.

The spots in the cornea usually appeared on the third day but sometimes as late as sixth or seventh day. In my own left eye corneal spots appeared within 48 hours after inoculation.

In the present series, in 95 per cent corneal infiltrations appeared at the beginning in the central parts of the interpalpebral area, and in 25 per cent of the early cases a few spots in each took fluorescine stain. Associated anterior uveitis seen by Kirwan in the same epidemic was not noticed in our series.

Differential diagnosis and treatment: Other types of monocular conjunctivitis are usually mistaken for this disease. Not only discharge is scanty in the latter but photophobia is marked and corneal signs appear early in epidemic keratoconjunctivitis but also the application of strong antiseptics causes exacerbation of the signs and symptoms in this condition. Acute uniocular follicular conjunctivitis associated with preauricular adenitis is not extremely rare in Bengal. In such cases corneal infiltrations take long time to appear but corneal vascularization appears quickly and can therefore be differentiated from the cases of keratoconjunctivitis.

It has been observed during the collection of tissues from corneal infiltrated area or from conjunctiva either by scraping or by cutting that there is invariably recession of signs and symptoms in the eye following the procedure. On other hand as mentioned before the application of strong antiseptics (specially silver salts) irritates the affected eye and aggravates the conditions. Mydiatrics like atropine, homatropine and scopalamine salts are found useful as has

been observed by every one. It should not be stopped till the cessation of photophobia and sensation of discomfort or lacrymation associated with the disease. Often great relief has been obtained by one or two applications of homatropine when persistence of discomfort of photophobia are the only complaints. Sulpha drugs from 1940 and pencillin from 1945 have been used in several cases without any marked benefit.

In America, Brailly and Sanders in 1943, treated 20 cases with convalescent serum and reported good results. Striking clinical improvements followed and corneal infiltrations are reduced both in frequency and severity. Hot compress or fomentations are not tolerated well in cases with marked conjunctival reactions.

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ROENTGEN THERAPY OF TUBERCULOUS GLANDS OF THE NECK

S. ALAM, M.B.B.S. (PB.), L.R.C.P. (LOND.), M.R.C.S. (ENG.), D.P.H. (ENG.), D.T.M. & H. (ENG.), D.M.R.E. (CAMB.),

Radiologist, Mayo Hospital, Lahore

AND

M A. H. SIDDIQI, M.S., M.B.,

Civil Surgeon, Quetta/Sibi, Quetta

Uptil quite recently the physical treatment of cervical glands was the treatment of choice. More often than not, the condition recurred and the surgical procedure had to be repeated. All this led to a prolonged suffering and left unhealthy and ugly-looking scars on the neck. The other form of the treatment was expectant where the patient was treated on general lines, including rest, generous diet and plenty of open fresh air. The results of these methods of treatment were not very encouraging. The x-ray treatment of the tuberculous glands has given very encouraging and favourable results as compared with the other forms of treatment. It can be regarded as the single best treatment available.

TREATMENT OF THE TUBERCULAR CERVICAL GLANDS

We have consulted an enormous amount of the literature on the treatment of this condition. There are persons who are at the two extremes, *i.e.* some doing solely the radical operative treatment and the other doing the x-ray and the conservative treatment. There are others who are between the two extremes. We got excellent results from roentgen treatment aided in some cases by aspiration and drainage of the collarstud abscess. Radical operation of the tuberculous cervical gland is an operation performed less often to-day than 30 years ago. Surgeons in general seem disposed in favour of conservative measures for certain types of the disease reserving radical excision for localised glands in upper deep cervical group, infected presumably by the same pharyngeal route (Cumming W. M., 1933) where it is possible to remove the tonsillar portal of entry. Extirpation of the disease in its entirety is the usual aim and some authorities hold this to be the only justification for operation.

The practical objection to this ideal is obvious to any one who has performed or watched the performance of the deep dissection of the tuberculous neck glands, which are usually much more extensive than is clinically apparent. It is often difficult to decide where the disease ends and which gland may safely be left untouched. Naked appearances are unfortunately no infallible evidence of freedom from tuberculosis. Webster R. A. says that even concurrent removal of tonsils or adenoids 46 per cent of which will exhibit microscopic tubercles, take no account of their lymphatic efferents. Although

actual tuberculosis of lymphatic vessels has never been demonstrated their fluid contents may hold living bacilli. It is therefore possible for even the most searching dissection to overlook some focus from which the fresh disease may arise and that this is common is suggested by the frequency of local recurrence after operation.

The incidence of local recurrence according to Miller is about 26 per cent. Grey Turner puts the recurrence at 23 per cent. The frequency is greatest in the tonsillar group. In Thompson's 44 cases the recurrence rate of 91 per cent was noted after complete radical excision attempted by various surgeons. In 39 of these cases the recurrence became apparent within three months of the operation and in three within 9 months. Fifty per cent of these patients had persistent discharging sinuses.

Surgical extirpation even if it is possible, is not necessarily desirable because the disease is seldom fatal. If complete removal of tuberculous cervical glands is unattainable in practice and theoretically without foundation there remains a body of opinion in favour of partial excision in the belief that glands in other situation may improve with the removal of the main mass of the disease.

X-Ray Therapy

We have put 70 odd cases on x-ray therapy and 70 cases on conservative measures for the comparison of the results. This work was carried out in Mayo Hospital, Lahore during the year 1945-46. All types of cases without any regard to early or late were submitted to roentgen therapy and no attempt was made to select the cases. On the other hand cases which were submitted to conservative treatment were mostly the early cases with discrete nodules here and there. Only a very small percentage of these cases needed minor surgical measures such as aspiration or curretage. Each case was followed for an average of six months. The cases treated with roentgen therapy were divided by us into 2 classes. Class I—Cases with large confluent masses with or without abscesses or sinuses and associated with scarring. Class II—Cases showing small discrete nodules all over or large swellings scattered here and there. This may be associated with sinuses or abscesses. This division was made only to regulate the various factors in the treatment. During first two days of the patients' visit, a complete history of each case was taken, the patients' habits, financial condition and the home surroundings were noted. A complete physical and local examination, necessary laboratory examinations (total and differential W.B.C. count and B.S.R. in all cases, total R.B.Cs and Hb percentage and colour index in certain cases; examination of the aspirated material from any associated abscesses, biopsy of the gland in doubtful cases, and urine and stool examination in certain cases, tuberculin test 1:10,000 in all cases) were carried out. A complete examination of the chest was done in different cases and all the cases were x-rayed and screened. Each case was also referred for complete examination of ear, nose and throat to the specialist. The glandular enlargements were measured with a caliper, their size, site, mobility or otherwise and consistency were recorded every week.

Any associated disease or septic focus was treated before the commencement of the treatment. The following routine was followed in these patients:—

Class I. The following factors were used in these cases:—

Kilovoltage	..	300
Filter ..	..	1 mm. lead and ½ mm. copper.
Milliamperage	..	4
Time ..	..	10 minutes.
Distance	..	50 cm.

Size of the field was sufficient to include the area between the middle line of the neck in front, anterior border of the trapezius behind, clavicle below and a line drawn at the level of the zygomatic arch above.

Number of the Fields.—The number of the field was one for unilateral cases per week. For bilateral cases two fields were used each field exposed once a week. The number was increased by one every week for each additional site of the body involved other than the neck.

The treatment was continued for six weeks and this was termed as one course of roentgen therapy. Most of the patients needed more than one course and this was repeated after 6 to 8 weeks. Total dosage at 900r units were given in one course for unilateral cases, 1,800 units were given for bilateral cases. 900r units were added for any additional site in the body involved. Those cases which were not completely cured by one course were given another course after an interval of 6 to 8 weeks during which no treatment was carried out. During this period of rest the radiation effect was lost and thus the patient was able to undergo another course of roentgen therapy.

Class 2. The following factors were used in these cases:—.

Kilovoltage	..	85
Filter ..	..	3 mm. Al
Milliamperage	..	5
Time ..	..	4·30 minutes.
Distance ..	..	20 cm.

Size of the field sufficient to include the area between the midle line of the neck in front, anterior border of the trapezius muscle behind, clavicle below and a line drawn at the level of the zygomatic arch above.

Number of the fields—For unilateral cases one every week for six weeks. For bilateral cases one for each side of the neck. These cases were given two exposures every week for six weeks. For any additional site of the body involved the number of the fields was increased by 1 every week for 6 weeks. Roentgen units per dose 150r. Space factor—once weekly for unilateral cases and twice weekly for bilateral cases. The cases which had some other site of the body involved were exposed once every week for each site of the body. The treatment was continued for six weeks and this was termed as one course of roentgen therapy. Most of the patients needed

more than one course and this was repeated after 6 to 8 weeks.

Total dosages—This was the same as for Class 1.

Progress Report—The glands were measured by a caliper every week. Complete physical examination was done and an exact record of the weight was taken. Total and differential counts and E.S.R. were done at the end of one course of treatment and if required during the treatment.

The results were tabulated as:—

1. Good, when the glands returned to their normal size. There was increase in weight. There was improvement in the E.S.R. and in general health of the patient.

2. Moderate, when the glands were reduced in size to a considerable extent and there was considerable improvement in general health.

3. Bad, when these cases made no improvement or became worse.

The record of 140 cases is given in tables below:—

Cases Treated by X-Rays

Table I—Showing Incidence of the Site of Glands causing the Abscesses and Sinuses

Glandular Group	No. of cases	No. of cases requiring minor surgical measures: Aspiration	Incision, curettage or removal of the feeding glands	No. of cases which healed otherwise
Upper jugular ..	13	8	2	3
Middle jugular ..	2	1	..	1
Upper & middle jugular ..	1	..	1	..
Posterior triangle	2	2	..	..
Supraclavicular	1	..	..	1
Submaxillary ..	2	..	..	2
Total No. ..	21	11	3	7

Table II—Showing the Analysis of the Results

Result	No. of cases	Rich	Poor	Rural	Urban	Percentage
Good ..	46	13	33	12	34	65·7
Moderate ..	17	2	15	8	9	24·3
Bad ..	7	2	5	2	7	10
Total ..	70	18	52	22	48	100

Table III—Showing the Details of the Treatment

Result	No. of x-ray given	No. of cases
Good 46 cases	1	24
	2	14
	3	6
	4	2
Moderate 17 cases	1	17
	They never had a second course.	
Bad 7 cases	All the cases had an irregular treatment. No one completed even a single course.	

Cases Treated by Conservative Measures

Table IV—Showing Incidence of the Site of Glands causing the Abscesses and Sinuses

Upper jugular	13
Middle jugular	3
Supraclavicular	1
Submaxillary	2
Posterior auricular	1
Total	20

Table V—Showing the Analysis of the Results

Result	No. of cases	Rich	Poor	Rural	Urban	Percentage
Good ..	6	4	2	1	5	7·1
Moderate ..	18	3	15	4	14	20·0
Bad ..	46	6	40	16	30	72·9
Total ..	70	13	57	21	49	100

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SPECIAL ARTICLES

I

SOME THOUGHTS ON THE MODE OF ACTION OF SULPHONAMIDE DERIVATIVES

A. N. BOSE, M.B.,

(Bengal Immunity Research Institute, Calcutta)

For the last decade Sulphanilamide and its derivatives have held a premier place in the chemotherapy of disease. Truly speaking it has brought about a revolution in the prevalent mode of scientific thought and has contributed to the understanding of various life processes of microbes and their associated conditions. Though penicillin, streptomycin, tyrothricin and allied antibiotics are slowly pushing it down in the realm of therapy, yet, in multifarious application, it still holds an important position in the armamentarium of the physician.

Application of sulpha therapy has been almost universal. It is surprising, however, that its mode of action still defies proper elucidation. Various attempts to tear down this veil of mystery have often led the scientist to move in more and more complicated pathways of human understanding. Thus the earlier ideas of stimulation of body defences (Long and Bliss, 1937; McIntosh and Whitby, 1939; Reed and Orr, 1942—and others), decapsulation of virulent organisms (Levaditi and Vaisman, 1935), production of more anti-bodies (Nitti and Bovet, 1936), detoxication of toxic materials of bacterial metabolism (Levaditi and Vaisman, 1939; Raka and Hamre, 1944) have not been able to solve all the problems associated with the mechanism of activity of these drugs, chemical and biochemical explanations such as the oxidation of the molecule in the system (Mayer, 1937; Mayer and Œchslin, 1939), the anti-calalase theory (Shin *et al*, 1938, 1939, 1940), the Bell and Robbins' theory of correlation of acid-dissociation with activity, and many such ideas, have, likewise yielded no completely satisfactory picture of this problem.

The Woods Fildes theory of competition of the drug with para-aminobenzoic acid (PABA) with consequent blocking up by the chain of synthesis, so necessary for bacterial growth, however, blazed a new trial in this complicated field and all the subsequent work for explaining the mode of action have actually been devised on the basis of such theory. This blocking up has been attributed to the inability of enzymes to carry on the necessary synthesis. But such a theory also does not provide full explanation for all the drug action. Moreover, opinions, have differed as to what factors are brought into competition or which enzymes are really blocked by these drugs. While Woods (1940), Woods and Fildes (1940) and Fildes (1940) have limited their explanation to the ultimate depletion from the substrate of the essential metabolites or food-factors for the bacteriæ, Savag and his co-workers (1942, 1945) have offered a different idea, based on the inhibition of bacterial respiration which ultimately bring about bacterial death.

With regard to Woods-Fildes theory, the question is which part of the sulphonamide molecule is responsible for the inhibition of enzymes and completion with PABA? Similarity of chemical constitution on which the whole basis of this theory stands, certainly points that the para-amino-phenyl group is the factor involved. Actually the inhibition of sulphonamide action by procaine has been explained on this basis. The action of sulphapyridine, sulphadiazine, sulphathiazole and allied derivatives can also be explained through such chemical structural similarity with PABA. Though the analysis of quantitative data shows the potency of each sulphonamide drug to be directly proportional to its ability to counteract the anti-bacteriostatic action of PABA (Henry, 1944), it is not understandable why this should be so. It must be conceded that all the latter compounds, such as sulphapyridine, sulphathiazole, sulphadiazine, and its mono-methyl and di-methyl derivatives, have got far more widened activity than sulphanilamide. If it is accepted that the aromatic para-amino grouping comes into play during the interaction of synthetic processes for bacterial growth, it is to be expected that mole for mole the activity of all these drugs, against whatever organism it may be, would be the same. But clinically this is not true. While the N_1-acyl derivatives of sulphonamide conform to this derivation, the aryl derivatives certainly do not follow suit. Thus, mole for mole sulphathiazole is far more effective than sulphanilamide against staphylococci, and sulphapyridine and sulphadiazine equally so against pneumococci. Against B. Friedlander, none of the sulpha drugs except sulphadiazine are effective. Even against streptococci, which may be taken as the principal target of sulphanilamide, sulphathiazole and sulphadiazine appear to exert a more enhanced activity when compared mole for mole.

Therefore, blocking up of the enzyme synthesis by competition with PABA cannot explain the whole situation. So long as the para-amino-phenyl group is there, this type of action would have its play, but the moment this amino group is shifted away from the phenyl group by the introduction of a methylene group in the para position of the benzene ring, the mode of action of the compound invariably changes. The drug, p-aminomethylbenzene-sulphonamide ("Marfanil") which is not at all inhibited by PABA and exerts antibacterial action even in the presence of pus (Mitchel, 1944) is an example at point. But along with the changes in the behaviour of the drug, we also come across a loss in its *in-vivo* potency, as 'Marfanil' cannot tackle the systemic infections as readily as other sulpha drugs (Sen Gupta and Bose, 1946).

The theory of inhibition of bacterial respiration as evolved by Sevag and Shelburne (*loc. cit.*) may be said to explain the observed facts in a better way. It can, however, never take away the importance of the contribution of Woods and Fildes, since it can only develop as a side line from the main arguments of the Woods-Fildes theory. The whole controversy between these two theories may be symbolically represented as one causing bacteriostasis by starvation, against the other causing death by strangulation. The first does not allow assimilation of food by the bacteria while

the second denies the breath for life. Though the ultimate objective of bacterial dissolution is attained through both the operative forces underlying the respective theories, there is a basic difference between the two with regard to their lines of approach. It is true, physiologically, inhibition of respiration can serve as a more powerful weapon against bacteria (why, against all living beings) than starvation which prevention of food synthesis entails. But the question remains again which part of the sulphonamide molecule would be necessary for the inhibition of such respiration, and which respiratory enzymes would come into competition for such an action. With regard to co-carboxylase, it is possible to understand its similarity of structure with sulphathiazole while the di- and tri-phosphopyridine nucleotides can serve as competitors for the pyridine and diazine derivatives. But how can sulphanilamide itself serve as an inhibitor of these enzymes, though Sevag (*loc. cit.*) has shown actual inhibition of bacterial respiration by this compound? Sulphanilamide itself has no structural similarity with co-carboxylase and the di- and tri-pyridine nucleotides. Yet Sevag *et al* (*loc. cit.*) have reasoned that sulphanilamide inhibits bacterial respiration "probably through inhibition of co-carboxylase". If it is argued that the pyridine, thiazole, and diazine parts of the sulphonamide molecule were only responsible for the inhibition of the respiratory enzymes, it is to be expected that substitutions in the aryl-amino group will not affect their respective potencies. In that case, N_4-acetylation of the compound ought not to bring about a decrease in potency which this process always involves during synthesis of sulpha compounds. On the other hand, the presence of an arylamino grouping is considered essential for exerting a true sulphonamide type of action. Dorfman *et al* (1940, 1942) have demonstrated that N_4-acetylation of sulphathiazole and sulphapyridine does not affect their inhibitory actions on bacterial respiration, though the loss in therapeutic potency is significant. This finding certainly goes against the correlation of inhibition of respiratory enzymes with potency. It would, however, be interesting in this respect to prepare and study compounds such as the p-amino-methyl-benzene derivatives of sulphapyridine, sulphathiazole and sulphadiazine in order to find out the role of such substitution on the inhibition of bacterial respiration and to correlate the same with corresponding activity.

Naturally, therefore, it will have to be accepted that the activity of these drugs are determined by various other factors. According to Bell and Robbin (1942, 1943) the bacteriostatic activity of the sulphonamide group of compounds can be correlated with their acid-dissociative constants. Starting from a point of minimum dissociation, the respective activity of these drugs increases with the increase in the acid dissociation constants till a point in dissociation is reached after which the activity falls. Sulphathiazole (Pka 7·15) has been shown to occupy the highest point in this range of compound. In general, it has been shown that sulphonamide activity is at a maximum when the Pka of a sulphonamide is close to the pH of the culture medium, and decreases progressively as the Pka value departs in either direction from this pH (Cowles, 1942). It has been taken that the more closely the dissociation of a compound agrees with that of PABA the more reactive it becomes for the enzymatic competition.

Whatever may be the nature of the fight between the drug and the infecting agent, whether starvation on strangulation plays the part, it is almost certain that the contact between the two would be intimate. For this, the drug would have to penetrate the bacterial bodies to come to the final grip, and in this respect, the physical laws of diffusion, absorption, and ionisation help a good deal. But a strong absorption or diffusion through the cell is not a criterion of drug activity, though evidences through electron microscope have been found to show that the drugs do enter the cell (Feinstone *et al*, 1942). In the opinion of the physical chemists, bacterial metabolism generally take place at the cell-surface (Adams, 1941), and the delay in sulphonamide bacteriostatsis has been attributed to slowness in attaining equilibrium of absorption at the cell-surface (Chandler and Janeway, 1939). Though ionisation is considered essential for the final activity of the drug, yet for the diffusion and penetration through the bacterial wall, undissociated molecules are considered better. Cowles (*loc. cit.*) has remarked that for activity 50 per cent ionisation of the compound would be most effective, though Bell and Robbin (*loc. cit.*) do not agree with this contention.

Considering bacteria containing both surface and intracellular enzymes, the phenomenon of drug action on this aspect would be worth investigating. It must, however, be kept in mind that bacteriæ ara not simply inanimate objects constituting a "bag of enzymes" within the cell, and that selective diffusion, defying the laws of osmosis has been noted, as in the case of all semi-permeable membranes. Enzymes are different according as they catalyse anabolic or catabolic reactions. It can very well be imagined that surface enzymes have got various configurations and patterns, each group probably competing with similar groups in the drug molecule. It can further be imagined that bacteriostatic action of drugs may require competition with both anabolic and catabolic enzymes. In that case, while similarity of structure of sulphapyridine, sulphathiazole and sulphadiazine will allow inhibition of bacterial respiration, the free para-aminophenyl group will compete with the enzymes required for anabolic purpose of utilisation of food and building up of bacterial bodies. This competition would be favoured by a suitable environmental condition of optimum acid dissociation and an ideal pH which are satisfied by the Bell-Robbin's theory. But that acid-dissociation at a range of near about Pka 7·15 is not always necessary, can be judged by the efficacy of compounds like sulphaguanidine (Pka 4·3), both of which have been shown to be clinically effective (Marshall *et al*, 1940; Bose and Ghosh, 1946; Sayer and Young, 1945).

If we scan the various derivatives of sulphanilamide, it appears that though there seems to be some intermingling of action, there is also some amount of speci-

ficity and widening of activity as we proceed from sulphanilamide to its pyridine, thiazole and diazine derivatives (Marshall *et al*, 1942). Though *in vitro* tests have shown various compounds to be effective bacteriostatic agents, in animal protection tests, such promises have not been fulfilled with many. This selectivity of therapeutic action by which certain micro-organisms are more susceptible to the attack by certain particular sulpha compounds, require further explanation which are not forthcoming.

The difficulties of bacteriological investigations, must however always be kept in mind. In biological standardisation, we usually employ one variable factor, keeping the other environmental conditions as same as possible. It is however not possible to do so with multi-bacteriostatic drugs such as the sulpha drugs, basing the results of their activity against any single infectious or non-infectious organisms. Explaining the mode of action of all the derivatives therefore, on the basis of their action on one single organism would, therefore, be fallacious. But from a scrutiny of literature, we find many conclusions drawn from such single studies.

In the vast field of widely divergent findings one can understand the difficulty of a single generalisation for the mode of action of sulphonamides. But certain facts are worth considering for coming to some future understanding of this subject. It must be accepted that the ultimate evaluation of a chemotherapeutic remedy will be judged by its efficacy *in vivo*. *In vitro* tests carried to demonstrate the bacteriostatic activity of drugs in synthetic or semi-synthetic media can never give accurate idea as regards their *in vivo* efficacy. The cause is easy to understand. In bacteriostatic tests on synthetic media, the organisms are placed in an unnatural environmental condition,—conditions not available in the animal living host. Moreover, many of the results have been drawn from tests made with non-pathogenic organisms such as *E. Coli*. To do away with the powerful inhibitors present in natural media, synthetic inhibitor-free media have been developed for such study. But powerful pathogenic organisms such as hæmolytic streptococci, pneumococci, and others do not grow properly in such media, and hence bacteriostatic tests with these organisms cannot be restored to in synthetic media. From the physiological point of view, it must, moreover, be conceded that the action of a drug in the living system, would depend more on the conditions available there. Therefore, *in vivo* tests must always be taken as the criterion for the final evaluation of these drugs and/or explaining their mode of action.

Analysing the effect of sulpha drugs on the bacteriological flora, it is evident that their action is more preponderant on the gram positive bacteriæ than on the gram negative ones, and that again on the virulent organisms than on the avirulent forms. The gram negative organisms of the dysentery group however are sensitive to sulpha drugs, but they have also been classified as gram variable (Dubos, 1946). It has been found by chemical analysis that gram positive organisms are more acidic in character than the gram negative organisms, which are comparatively basic. The organisms such as *E. Typhi* is found to be more basic than the dysentery organisms and the gram negative cocci such as gonococci, meningococci which are intermediate between acid gram positive cocci and the more basic gram negative bacilli and cocci. It is quite likely that this acidic character of the protoplasm of susceptible gram positive cocci and gram variable organisms facilitates a combination with the basic part of the drug, to bring forth a drug-bacterial protein-complex, which is reversible. That sulphonamides combine with proteins is now definitely established (Davis, 1943). Therefore, the degree of ease and facility of such combination may certainly be a determinant factor for the relative activity of these drugs. Arguing on the same lines, it may seem quite probable that further compounds may be prepared which would be able to combine effectively with the basic protoplasm of B. typhosus to bring about its inhibition or dissolution in the system. The combination of different amino acids with sulphonamides would be worth trial in these respects.

Summarising all that has been said, it may be pointed out that the mode of action of sulphonamides cannot be brought down to a single unitary idea, and that many hurdles will have to be overcome before a correct picture of the same emerges. For example:

(*i*) It will have to be explained why one compound appears to be more active than others against a particular organism; in other words, what is the cause of specificity of drugs?

(*ii*) The bacteriostatic efficacy of sulphonamides vary with small differences in the incubating temperature (37·5 to 38·5). What differences or changes are brought about in the compound or the test organism has to be determined.

(*iii*) Growth factor studies of highly virulent, less virulent, avirulent variants of pathogens, and also that of non-pathogens or potential pathogens, will have to be carried, and a distinction has to be made between the factors necessary as essential metabolites and the real growth factors. Further, it will have to be studied whether the growth factors, so found, can be available to the organism from external sources as well, where the organism will have its natural parasitic effect. This will lead to synthesis of real analogues to serve as inhibitors.

(*iv*) The mechanism of drug-resistance, acquired by different bacteria will have to be thoroughly worked out in full appreciation of the data on drug specificity.

(*v*) Compounds will have to be prepared which will not be antagonised by para-amino benzoic acid, but will have more activity and less toxicity than the compounds available uptill now.

(vi) *In vivo* tests should be performed whenever possibe to test the validity of *in vitro* results.

The world of chemotherapy is expanding. With the increase of scientific vision, the horizon which seemed to be limited, is fast moving away uncovering fields of more beautiful thoughts. The mode of action of sulphonamides, penicillin and even drugs such as quinine, emetine and others, may not yet be in a position of possible systematisation, but the search for such knowledge will certainly lead us to newer vistas and bring out fresh laurels of scientific achievement.

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II

THE IMMINENT CATASTROPHE

P. C. DUTTA, O.B.E., F.R.C.S., LT. COL.,
Simla

Catastrophe has been defined as an event which causes great suffering or pain to mankind and that is exactly what I can see is going to happen unless every effort is made by all, not only the profession, but the public as well to curb it at once, this is going to be a very very difficult task.

Unlike in other countries the public has no regard, respect or even sympathy for the so-called allopathic system of practitioners. We will be living in a fool's paradise if we think that either the people or the Official State has any regard for the medical profession, and more than ample evidence of this is already manifest. We are just tolerated so long as we serve their purpose, and the consensus of opinion in the country is that as long as one pays for our services we are at their behest and there is no question of regard or respect associated with it, unless one wants free service, when it is only a lip sympathy. Compare this with other countries such as America, England or Russia where the medical profession it is not only highly respected but usually the adviser in all sorts of family and social affairs. In this country we are so depraved that unless one has the authority to punish he can hardly claim any respect.

You are seeing for yourselves the way things are moving. From press and platform the interested parties are bent on giving the indigenous system of medicine a position in our national life, which if conceded to will not only retard our progress, but will bring misery and suffering to millions and put the country back in the same place it was 4,000 years ago. With people, and specially the politicians it has become a fashion to boost the indigenous system and decry the scientific medicine as western medicine and as such unsuitable to our people.

Here, it is needless for me to reason that the scientific or the so-called western system of medicine is superior to others. Much has been published in your association journal, but although it is superior, I venture to say that it is not popular with the masses and the interested parties are taking the fullest advantage of this to denounce the only 'proved to be the best' system of medicine.

The facts are:—

1. We are the people who are responsible for efficient care and treatment of the sick and it is our firm conviction that this system is the best for our people. This is not due to the fact that we are practising this system and so we are backing our case, but taking all factors into consideration and trend of modern medicine, prevention of disease and treatment of the sick and wounded, if the practice of this system of medicine is lost then we will be a lost people in the modern world

* Read at the Silver Jubilee Session of the All-India Medical Conference, Calcutta, Dec. 1948.

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and the country will be ravaged by disease and pestilence.

2. In spite of our being convinced that the scientific system is the best, it is not popular with the masses.

3. Our conviction alone is not enough if the masses have no faith in our system and do not take to it.

4. So if we are sincere to help the country and the people every effort must be made by us to make the system popular and people 'allopathic treatment minded', so that we may have their support.

To gain a proper perspective let us find out the reason why the indigenous system is popular and why the scientific system is unpopular, in spite of our protestation that the latter is better. Then we will be in a position to chalk out what we should do to make the scientific system popular. Time has come when we must realise that unless we have the popular opinion with us, good or bad, we are doomed to fail. So it is of utmost importance to create public opinion in our favour and at the present state we cannot afford to ignore it, however high and mighty we may be in our own opinion.

REASONS WHY THE INDIGENOUS SYSTEM IS POPULAR

A. ECONOMICAL—It is cheap and easily procurable.

B. PSYCHOLOGICAL—

1. We have been brought up with the idea and it has been ingrained in us from our very childhood that it suits the people of the country better.

2. *Prejudice*—It means prejudgment—the making of a decision or adoption of an attitude or belief in advance. It is the perversion of rational judgment by self interest or group interest. It is really most striking when the strata of classes are changing as Crawshay-Williams put it, as is happening at the present moment when one group is threatening another in its power and prestige. It is particularly effective because it carries with it strong feeling-emotional tone.

3. *Religious*—The indigenous system has got strong association with our religion and our philosophy, and as such peope think it will be a sacrilege to denounce this. Moreover as the system is closely associated with gods, demi-gods and saints, and specially being a part of our greatest religious book the Vedas, it has a strong religious appeal.

4. *Cultural*—It is intimately connected with our old culture and ancient civilisation. They are part of our past glory at a time when most of the world was in darkness. Naturally people want to cling to it and think it will be disloyalty to our culture if we give it up.

5. *Nationalism*—The reaction to foreign domination for ages is now expressing itself in a very acute form. The scientific or western system as it has been called is considred a part of that foreign domination, and as such detested by the people. This hypersensitivity of the masses is being fanned by the politician and other interested parties for their own benefit. They are virtually exploiting the situation to their own advantage. The ancient system of medicine has got great patriotic appeal for our people.

5. *Irrational Thinking*—The religious, cultural and patriotic sentiments induce one to think irrationally —the pleasure-pain principle—we tend to want to do things which satisfy our instinctive desires and to avoid things which run counter to these desires. In the majority of cases the desire takes the form of a wish to believe something. This wish to believe something is in turn motivated either by the fact that a pleasurable emotion will accompany the belief or avoid the experience of an unpleasant emotion.

These sentiments are also associated with certain other desires which lead one to irrationality of thinking and judgment, *e.g.*, the desire to feel good. By conceding to these sentiments one has the feeling that he is obtaining the herd's good opinion. The other is the desire to conform. This desire is fundamentally unreasonable in that it impels us to adopt opinions without evidence, merely because they are prevalent among the community in which we live. In times of danger to the community, as in the present state, the whole tendency to conformity is greatly strengthened and it prevents the acceptance of new idea irrespective of whether it is good or bad. This impulse to conform is sufficiently powerful to make a large number of people accept opinions in deliberate opposition to evidence—exactly what is happening now.

The adoption of comfortable concept is naturally greatest when it will help us to believe something that we would like to believe, and the emotional aspect of the herd has to be taken into consideration.

Another psychological truth is that men find no difficulty in holding contradictory opinions and in allowing sharp cleavages between their principles and practice. Everyday leaders of thought failed to practise what they preach.

II. REASONS WHY THE SCIENTIFIC SYSTEM IS UNPOPULAR

1. *Economic*—The practice of scientific medicine is no doubt expensive, and the cost is going higher and higher with newer discoveries. The other factor is that it is not easily available and most people use the indigenous system as modern medicine as it should be practised does not or cannot reach them.

2. *Low Standard of Scientific Medicine as Practised in India*—Owing to various reasons the standard of scientific medical work is not high. Simply shouting that our system is better will not or does not carry any weight, specially when the peoples' mentality is antagonistic to us. The fault lies mainly in the system, custom and facilities available to the doctor.

(*a*) The hospital service is inadequate and inefficient except in two or three institutions in each province. The standard of work carried out in all these institutions is very poor indeed compared to similar institutions in other civilised countries.

(*b*) For the private practitioner scientific diagnosis and treatment is well nigh impossible. He has to adopt the cheapest means of cure which is certainly not the best. He usually gets the patient after the latter tried all sorts of therapy, in the late stages of disease, when it is difficult if not impossible to get satisfactory results. Often the chief object of the doctor is to keep the client satisfied. For this he has to combine his treatment with quackery and other methods which agree with the patient's superstitions and sentiments and as such the full extent of scientific treatment is denied. There is very little facility for the doctor to keep his knowledge up-to-date. Post-graduate instruction is difficult to obtain, except in a very few big stations, and it becomes doubly expensive as income for the period is not forthcoming.

3. In addition to these, no attempt has yet been made to eradicate the superstitions and false ideas of the people; rather they have been encouraged under the false pretensions of tradition and patriotism. Even a so-called educated person in our country has got exactly the same convictions regarding charms, magic and supernatural phenomena as the less educated ones. People must be given rational ideas so that they may have the courage to accept the truth.

4. *Specialist service is unobtainable,* specially for the middle class people, except in a very few hospitals. Facilities for free consultation of specialists by practitioners is necessary to get the full benefit of modern treatment. Because our knowledge is so vast now that it is not possible for one person to know all that is known or to acquire the required skill.

The Remedy

The remedy, therefore, lies in,

1. *Making the scientific system cheaper so far as the individual is concerned*—As science developed, medicine became scientific; it became highly technical, highly specialised and very efficient. Unfortunately however the cost of medical care increased more rapidly than the purchasing power (of medical care) of the average. There is need of new method of (economic) adjustment for medical care.

After years of struggle we have our independence. Even now if we produce the argument that because the indigenous system is cheap, our poor people must have it, there cannot be anything more shameful. Because a man cannot afford to pay for saving his life, he must be satisfied with anything cheap. It is the argument of the defeatist who because he cannot think of a better system of medical relief, insist that the poor people will have to do with useless things. Some of our politicians instead of trying to improve the method and system are inducing our people to these useless methods, because introducing a system of medical relief by which everybody rich or poor can get the best possible treatment by paying according to his income, is far too complicated and intricate a business to evolve. It is too much and the easy short cut is there, use indigenous system, and feel proud of your ancient culture, does not matter if you are crippled or die. The same politicians use a different argument when they themselves or their families are ill.

Although we are handicapped by financial conditions, with proper planning and adjustment, the standard, quantity, and quality of medical relief can be improved.

Out of the population in a given year, only so many are sick. Of the people who are sick, a considerable proportion is indigent. No one can say what will be the burden of sickness on any individual at a certain time. Only a comparatively few are sick and they have to bear the burden of heavy medical costs. It is impossible for them to bear this cost unless we can devise a method that will spread the payment over a much longer period of time than just the period of illness. It must also be spread over a large number of individuals. In other words there must be periodic payments of small amounts over a long period of time to provide for the concentrated cost of illness. I am confident it is feasible and it will give more dignity to the profession and people.

Government have already taken in hand the insurance of industrial workers. This can be extended to agriculturists and others. Small communities or groups of people may engage their own doctor on co-operative basis or subscription—the burden will be much less. This can be done if only the people are willing. But the people are unwilling to have such an organised system, because most of them think that they will be paying and as likely as not they will not get ill or they may get a Vaid or Hakim which is much cheaper, or the worse, they bank on the friendship or acquaintance of a doctor who will give them free service. It is a pity that the average Indian has got such warped sense of dignity and self-respect, that he never thinks it shameful to cadge free service of a doctor.

Next is Production of cheaper Medicine. Unless and until we can manufacture our own essential medicine, it will not only be a heavy drain on our national finances, but we cannot bring down the prices of drugs. Our resources are enormous and it will be possible for us to produce most of the drugs. We the so-called allopathic practitioners have been accused as 'vendors of foreign medicine'. This will disappear as soon as our firms produce reliable and standardised drugs. Some of the manufacturing firms are doing this already with distinction and credit. The pity has been that as soon as a firm or its product becomes popular, usually their quality degenerate and they lose their reputation. This is one branch of manufacture where honesty must be supreme. The State should arrange for free specialist consultation service for patients referred to them by general practitioners, who are not rich enough to pay for such advice.

2. *Better training of the physician*—Whatever happens we must keep up our standard and undergraduates and newly qualified people must be properly

trained in the art of medicine before they are let loose on the people. It is only by showing better results that we can convince the people of our superiority. I do not believe in the mass production of doctors at the cost of quality. With the new era many new institutions are springing up and are being graded up; we must be assured that these institutions can afford enough facilities for the proper training of doctors.

3. *Cultural aspect*—Because the indigenous systems have been in use for centuries and due to the reasons stated above, it is considered a part of our culture and civilisation. It must be retained as a part of our old culture, and the best way of doing this, as has been suggested by Siegerist, is to have a chair of indigenous medicine in the proposed Indian Institute or some of the other bigger medical institutions, where literary and medicinal research can be carried out. A museum should be maintained with it, depicting our cultural history, etc. The more useful of the drugs as confirmed in the research institution should be incorporated in an Indian Pharmacopoeia for the use of all doctors.

4. *Propaganda*—I realise that it is abhorent to any decent professional person to take recourse to this. But this has become important and imperative owing to the turn of events. Of late our opponents have become very vocal, and we are the much maligned people until our personal services are required by a particular person. The individual may be in our favour but the group on herd is against us, from motives discussed above. To-day when peoples' mind is fed and guided by propaganda, we cannot sit idle. The conviction that ours is best is not enough; it must be infused into the people. A people who have old tradition, culture and customs cannot just give them up, specially at a time just after the attainment of our independence when we are over-anxious to sever all connections with the much loathed western methods. It need be realised that public opinion is not in our favour and unless we can carry it with us, success is not possible. It has to be dinned by all method of modern propaganda and then only can we have the popular backing.

Our trouble has been that the eminents in the profession have been too busy with their work, and if I may say so, in amassing wealth, the average is too preoccupied eking out a living. The leaders of the profession thought and rightly so, it contemptuous to have anything to do with propaganda or advertisement or creation of public opinion in our favour. We all agree this must not be done for gaining personal ends, but time has come, when this has become necessary to save our people, to ensure the onward progress of the country, to retrieve our due seat in the comity of nations. We have to be the self-appointed guardians of the nation; it is our duty to our people and to the nation. If we fail, we fail our country.

The association must take on itself to create the public opinion, not for the good of the members of the association, but for the ultimate good of the people. We have all types of specialists among us, and details of effective measures need be taken may be decided by a small sub-committee and a detailed programme may be drawn up how this may be implemented. The following are suggested:

1. Pamphlets specially written for the purpose.
2. Essays included in children's text books. Children must be brought up with true idea of the essentials of medicine (not only of public health), the physical process of disease and how it can be best combated.
3. Articles in the lay press. This has been frightfully neglected.
4. Lectures by prominent people of the profession in their own areas.
5. Propaganda films along with the Public Health Department.

Lastly I am repeating that unless we can carry public opinion with us, not only will the profession suffer, (which is very insignificant when compared to the appalling and impending catastrophe to the nation), but the whole country is doomed. The surity of our own superiority is not enough; we must convince the people of it before they can have faith in us, and discard their age old faith and superstition. We owe this to our newly achieved free country.

III

STATUS OF INDIAN MEDICAL POST-GRADUATE QUALIFICATIONS

AMIR CHAND, F.R.C.P. (E.), LT. COL. I.M.S. (RETD.),
Hony. General Secretary, Indian Medical Association, Delhi

The Indian Medical Association and the All-India Medical Conferences have, on different occasions, resolved that the attention of the authorities concerned be drawn to the fact that the time had come when post-graduate medical qualifications obtained in India should be given preference to similar foreign qualifications for purposes of appointment as specialists and teachers in Government institutions, both civil and military, as well as other institutions and local bodies, medical schools and colleges, and other medical and public health and research institutions.

Prior to 15th August, 1947, India had not been governed by Indians for the benefit of Indians and those who were responsible for our education, discouraged the development of facilities for post-graduate medical education in India for obvious reasons. Partly for lack of such facilities and largely because of the ruling authorities concerned having assigned a hall mark of superiority—not necessarily of efficiency—to foreign qualifications, particularly British, many students have been going abroad for their acquisition. This attitude of the authorities reflected as it was bound to on public mind. As the rulers so the ruled. The public looked upon a local

trained doctor as a commodity inferior to a foreign trained, but did not Shakespeare say:

"How much the fool that hath been sent
to Rome,
Exceeds the fool that hath been kept
at home."

Only the rich can afford to go abroad for studies and it is a well known fact, at least amongst the student community in India, that riches and intelligence seldom go together. The result is obvious. Those who can derive real benefit from foreign education have, as a rule, not the means for it, while those who have are not, as a rule, fitted to make the best of it. A lot of money and intellect are thus wasted. The craze if one may call it, for going abroad means a heavy drain on the meagre resources of India. The amount thus spent can be much better utilized by importing on short term contract basis suitable teachers and research workers who will train our students as well as build and improve our institutions.

It was hoped that with the advent of independence not only the premium that was put on foreign, which in almost all cases meant British, post-graduate qualifications would be discounted but that the post-graduate qualifications obtained in India will get the recognition they deserve. But there are little signs of it so far. There is hardly an advertisement for a specialized medical post which does not still harp on an F.R.C.S. or M.R.C.P. and I can say with confidence that there has hardly been an instance in which preference has not been given to such and other foreign qualifications over the Indian qualifications by the selecting authorities functioning under the Central and Provincial Governments.

In 1947, the Government of India suddenly became over-generous and started granting scholarships for post-graduate studies abroad. At that time it looked to be a very healthy move but it soon transpired that the enthusiasm of the Government ran much ahead of the real needs of the country and was not preceded by any definite planning. In a number of instances, men of the right type were not selected and a little thought was given to how they will be employed on return. For many a selectee the Government failed to secure proper facilities for post-graduate training in first class institutions abroad and he was asked to fend for himself. But how could he succeed where the Government had failed? It was inevitable that under such circumstances, a sense of disappointment and frustration was caused, and time and national money were wasted. The plight of a number of those who have returned or are about to return is not at all happy. All that the Central Government has been able to do for them is to circularise the Provincial Governments enquiring if these people could be employed any where.

Teachers for non-clinical subjects are not available in India for the new, and even for some of the old, medical colleges. Yet the number of scholars sent for post-graduate training in these subjects is insignificant, as compared to that of those for other subjects. What already existed, at least to some extent, has been added to, while little attention has been paid to fill the blank. This is one reason for discontent among those who on return find that their services cannot be utilised by the State and that they themselves have to hunt for jobs. Pre-planning would have avoided this.

Instead of laying more stress on real practical training and experience, the authorities have been encouraging the passing of examinations, which to a very large extent demands cram work at home and means a plethora of theoretical knowledge without much practical experience and a special knack of passing examination. It is a common knowledge that one may become an F.R.C.S. without even doing a single major operation. This notwithstanding our Government still gives preference to those who can display such letters after their names over those who have under-studied specialists, teachers and research workers but have not considered it worth their while to sit in examinations for securing a few letters after their names. The Hon'ble Minister of Health, Government of India, and the Director General of Health Services are reported to have favoured the idea of the Indian post-graduate students in the U.K. taking British qualifications. The D.G.H.S. read a paper at the Roval Society of Medicine in London on the 6th July, 1949, on recent developments in the field of health in India. During the discussion Col. Sir George McRobert, I.M.S. (RETD.) asked a question regarding the Indian scholars going in for post-graduate examinations in the U.K. Sir George is reported to have said that Indian Doctorates and Masterships were any day as good as the British M.R.C.P. or the F.R.C.S. and that it was pathetic to see a scholar coming for advanced training in plastic surgery rush in search of a coach in anatomy, almost as a first act after landing in the U.K., and set full sail for the primary and final F.R.C.S. He spoke from personal knowledge of his old students and colleagues who had gone to the U.K. for specialised training in various branches of surgery but had spent most of their time in doing F.R.C.S., etc. at Government expense. He hoped that Indian post-graduates working in the U.K. would not spend their time studying for higher British qualifications, but would instead gain practical experience in such specialities as thoracic and plastic surgery and held that the higher degrees of Indian Universities were quite as good as the British. Dr. K. C. K. E. Raja, the Director General of Health Services, replied that their attitude was not to prevent Government scholars, especially from teaching institutions, taking degree in the U.K. This reply is said to have unnerved a number of scholars who were devoting full attention to practical training without any idea of taking a British qualification. The reply given by Dr. K. C. K. E. Raja could have hardly established, what to say to have enhanced, the prestige of Indian medical post-graduate qualifications. Let us hope it is only a passing phase of judgment and that the time will soon put the Indian qualifications in their proper place.

CASE NOTE

TWO CASES OF PREGNANCY AFTER MONOPAUSE

K. P. BHADURY, M.B.,

Associate Professor of Midwifery & Gynæcology, National Medical Institute and Senior Visiting Obstetrician & Gynæcologist, Chittaranjan Hospital, Calcutta

Case 1—Mrs. P. C., aged 46, 6-para, last child 10 years old; 1st child at the age of 18, all living and healthy.

Menarche—at the age of 13 years. Menses regular, lasting for 5-6 days. Last mens—4 years ago. At the age of 42 her menses became scanty and lasted for 2-3 days every month; gradually it became more scanty and irregular, and ultimately it stopped 2 years back. Since then she has the complaint of sleeplessness, occasional heat in the face and head and uneasiness, palpitation, etc.

On 13.8.46 she complained of: (1) Pain in the lower abdomen—duration 5-6 months. (2) Leucorrhœa—5-6 months. (3) Constipation—6 months. (4) Loss of appetite—6 months. General health—good: Heart, lungs, etc.—normal; pulse—84 p.m.; resp.—20 p.m. P.V.—Relaxed outlet, slight cystocele and rectocele. Cervix—somewhat soft. Body of Ut. —A.V., A.F., slightly enlarged and soft. Culs—Clear. It was then considered to be a case of fibroid though the feel of the uterus and cervix was quite unlike it.

18.10.46—A smooth regular and soft mass felt 2 fingers above symphysis pubis. P.V.—Cervix—normal. Body of Ut.—enlarged to 2 fingers above symphysis pubis. Because this rapid enlargement could not be accounted for by the diagnosis of fibroid, an A-Z test was advised.

5.12.46—Fundus—one finger below umbilicus. F.H.S.—heard.

23.3.47—The lady delivered a female baby, but rather small in size just below 6 lbs.

26.7.49—The baby is healthy. General health of the mother good. No menstruation since then. She is complaining of flushes in the face and head, sleeplessness, headache, etc. Advised—Stilbœstrol 1 mg. B.D.P.C. and Elixir Bromo Valerianate one teaspoonful B.D.

P.V.—Slightly relaxed outlet, cervix healthy. Body of Ut.—A.V. & A.F. small, culs clear.

Case 2—Mrs. K. M., aged 48, para 9, with 7 living children, last child—9 years old, living and healthy.

First mens started at the age of 14, normal, lasting 6 days. Subsequent menses—regular, normal 5-6 days. Last mens—3 years before, *i.e.*, at the age of 45. Since then she was complaining of uneasiness, sleeplessness, headache, etc., which was relieved by some medicine prescribed by another physician.

3.4.48—I was called in to see this lady who was bleeding profusely and found her lying on the floor with the garments soaked in blood. She was almost unconscious. Pulse feeble, 136 p.m. Abdominal examination—No mass was felt per abdomen.

Past history—Slight vaginal bleeding for 15 days and pain in the lower abdomen—one month.

Morphine gr. ¼ and Atropine gr. 1/100—was injected, and subcutaneous saline with 5 per cent glucose, one pint given.

Gradually the pulse improved and she fell asleep, vaginal examination was not done.

5.4.48—Pulse 90 p.m., no pain and no bleeding. After enquiry I got the above history from the patient. She refused internal examination. I thought that probably she is suffering from uterine cancer, which eroded one of the blood vessels and due to this she had profused hæmorrhage. Therefore I advised the family physician to send the patient to a hospital where radium and deep x'ray would be available.

17.7.48—A mass was felt in the lower abdomen rising up to the level of the umbilicus. F.H.S. present. Pregnancy was diagnosed. P.V.: cervix—normal, culs—clear, fundus of Ut.—at the level of umbilicus.

25.10.49—The patient delivered spontaneously of a living male baby. Mother and baby have remained healthy and well after this.

Discussion

The above two cases bring forth the question—is pregnancy possible after menopause?

The answer has naturally to be in the proper perspective. The word menopause literally means stoppage of menstruation—permanently. Menstruation may often remain stopped for varying periods, even 2 or 3 years, for various reasons including illnesses of several types. But the main point is that natural "Menopause" is normally associated with cessation of the discharge of mature ova from both ovaries. Abnormalities however, can, and do, occur, and ovulation may continue, even though irregularly, for varying periods after the menses have stopped permanently. An ovum discharged at such type of irregular ovulation can, if fertilised, lead to pregnancy just as in the sexual period of life—as the above mentioned cases exemplify. If the daily rectal temperature in the morning be taken after menopause, for at least for 3 years, it can be ascertained whether ovulation is continued for some time in certain cases or not.

JOURNAL OF THE

INDIAN MEDICAL ASSOCIATION

CALCUTTA, DECEMBER, 1949

NEUROSURGERY

It is gratifying to note the awakening of interest, in our country, in the newly emerging and potentially fruitful branch of Medical Science—Neurosurgery.

It may be instructive to state something of the early days of neurosurgery and its further evolution. For, we should pay proper attention to the difficulties experienced by the pioneer workers of other countries and try to profit by their experiences. It is also vitally necessary to give accent to many special features of this fascinating and promising branch of surgical practice, which is wedded to medicine.

Brain has remained the seat of the mind and the final hope and despair of mankind. It has intrigued him to probe inside the skull for a solution of many ills that affects the body and mind. It is a thought of pride and shame that Indians were among the pioneers in the art of trephining but contemporary surgery in India has made no significant contribution to the surgery of the brain.

Let us remember, however, that neurosurgery is a speciality of recent times. Although occasional reports may date from the late nineties and early twenties—for Wernicke suggested the possibility of operating on tumours in 1881 while Macewer did remove one—it is only during the last 20 years that neurosurgery has been organised and recognized as a speciality.

Fifty years ago, even in advanced countries, operation on the brain was an occasional job for a general surgeon, whether motivated to do something spectacular or in response to unavoidable pressing needs. It was no wonder that many head-line hunters missed the line and turned sober and pedantic, while others—those compelled to operate—became sad and thoughtful. This none too enviable state of affairs was due to the condition of contemporary medicine and surgery, which was not sufficiently advanced and suited for the emergence and growth of this new speciality. A process of education of the general physicians, general surgeons, general practitioners, and the public was a pre-requisite for the birth and growth of neurosurgery.

It is interesting that neurosurgery as a speciality was recognised and practised in America, while other countries in that period had general surgeons—some of them brilliant operators—doing neurosurgical work. Among the outstanding pioneer achievements in this field in America, the contribution of Harvey Cushing to brain surgery, Charles Frazier's surgical technique in trigeminal neuralgia and Charles Elesberg's work on surgery of the spinal cord, must be mentioned. In England, although Sir Victor Horsley was the first surgeon on record to successfully operate on brain tumour with several outstanding surgeons like Percy Sargant and others, neurosurgery was not a speciality. De Martel in France, Fedor Krause in Berlin and Raffaele Bastinelli in Rome were some of the early and outstanding general surgeons doing considerable surgery of the nervous system.

Thus we find neurosurgery emerged as a special branch of surgery having proved its importance, urgency and specialities. But its further growth and development is still more fascinating and instructive. Here is a unique process of differentiation into specialities—neurology, neurosurgery, neuroroentgenology, neuropathology and electro-encephalography—and final integration of these specialities into one composite and correlative unit—neurology. For, neurosurgeons soon realised that to tackle and solve the ever-challenging problems of disease and dysfunction of the nervous system, a combined effort of all trained in their respective specialities were needed. For better diagnostic, therapeutic and investigative approach, pooled resources of team workers—their talent and technique—are necessary.

The department of neurosurgery should form an integral part not of general surgery but of neurology unit, which should in addition compromise other adjunct diagnostic and therapeutic facilities—electro-encephalography, neuroroentgenology, and physio-therapy included under the same unit.

A neurology unit with neurosurgery can only operate in a hospital where the administrative authorities are appreciative and willing to afford all facilities —financial and technical—necessary for its proper functioning. Trained nursing personnel, electrosurgical equipment and specially constructed operating unit are needed. Candidates for training in neurosurgery should be selected in consideration of personality and achievements. He should have the imagination and understanding to pull together with other co-workers and have the drive and enterprise to go ahead to tackle the problems. He should have a fair experience in general surgery and special training in neuro-anatomy, neuropathology and neurology. Then he should work in a neurosurgical unit under a recognised and reputed neurosurgeon for several terms. It requires years of training and devoted discipline of a life-time to be a neurosurgeon worth the name. He contributes not simply to the relief of the suffering of his patients but in co-operation with his colleagues makes fresh and lasting contribution to the fascinating field of neuro-physiology.

It is re-emphasized that adjunct diagnostic and therapeutic facilities as mentioned earlier, are integral parts of neurosurgery. At the neuropathology department rapid biopsy studies will help the surgeon in his decision while revelations from the autopsied materials at the altar of truth will educate him, for his future. In the electro-encephalography laboratory, abnormal patterns of electric waves will help to diagnose the true epileptics, dispel the haunting dread from those falsely implicated and what is more necessary for the neurosurgeon, will give a correct pointer to localisation of brain tumour. Cerebro-angiography and air encephalographies at the attached neuroroentgenological department will unmask hitherto unrecognised aneurysms and neoplasms. Physiotherapeutic depart-

ment, with its trained personnel and mechanical appliances, as an intergral part of the neurosurgical unit will help in rehabilitating the patient in all its aspects, for a neurosurgeon's job does not end with the removal of an operable mischief or correcting some dysfunctions. The neurologist of the unit will and should help the neurosurgeon in his work and jointly assess the investigative findings of the adjunct departments and plan the therapeutic regime and in return will enrich his own experiences.

We hope and trust that such a neurogical unit will command respect of all and will draw patients in large numbers. For proper functioning of such a special unit, a neurosurgeon and his team needs a constant volume load of patient. It is therefore neither necessary nor desirable to establish such a unit in all and any hospitals. But it should function only where trained personnel, financial solvency and abundance of neurosurgical patients are available.

As Wechsler points out that "adventure still beckons to the pioneer and glory and honour no less than inner reward awaits the coming investigators. It is now plainly evident that Neurology has a great future." We note with appreciation Egas Mouz celebrated for his neurosurgical contributions has received the Nobel Prize. The neurosurgeons of India have got unchartered field of great possibilities. In this land of ancient culture and ageless though from time immemorial, the divinity of man has been the central theme of our religion and philosophy. Neurosurgeons should think themselves previleged and remember the old saying "in no function do human beings approximate the Gods more closely than in bestowing health upon their fellowmen."

XXVI ALL-INDIA MEDICAL CONFERENCE

Venue: The Senate House, University of Allahabad, Motilal Nehru Road.

Provisional Programme

SUNDAY, THE 25TH DECEMBER, 1949

10 A.M.—Meeting of the Working Committee of Indian Medical Association.

MONDAY, THE 26TH DECEMBER, 1949

11 A.M.—Annual Meeting of the Central Council of Indian Medical Association.

TUESDAY, THE 27TH DECEMBER, 1949

10 A.M. to 1 P.M.—Inaugural Session of the All-India Medical Conference.
2-30 P.M. to 4 P.M.—Opening of Exhibition.
4 P.M.—Group Photo.
5-30 P.M. to 8 P.M.—Scientific Session—(*a*) Inauguration, (*b*) Symposium on Antibiotics in Tuberculosis and (*c*) Surgical Papers.
10 P.M.—Subjects Committee. Entertainments (Musical Soiree).

WEDNESDAY, THE 28TH DECEMBER, 1949

9 A.M.—Civic Reception to members of the Medical Profession by Municipal Board, Allahabad.
11 A.M. to 1 P.M.—Scientific Session—Symposium on Epidemic Dropsy and Scientific Papers.
2-30 P.M. to 4-30 P.M.—Scientific Session—Symposium on Infantile Cirrhosis of Liver and Scientic Papers. Subjects Committee if necessary.
5-30 P.M. to 8 P.M.—Conference—Open Session.
9-30 P.M.—Scientific Film. Variety Entertainments. Subjects Committee, if necessary.

THURSDAY, THE 29TH DECEMBER, 1949

8 A.M. to 11 A.M.—Sight-seeing trips round Allahabad in batches.
11 A.M. to 1 P.M.—(1) Scientific Session—Symposium on Uterine Hæmorrhages and Scientific Papers. (2) Central Council Meeting.
2-30 P.M. to 4-30 P.M. & 5-30 P.M. to 8-30 P.M.—Conference—Open Session.
9-30 P.M.—Variety Entertainments.

NOTE—Separate accommodation arrangements are being made for Ladies and Gents in buildings (tents if necessary) within easy reach of the Conference. Board and lodge charges at the Delegates' Camp will be between Rs. 12-8 and Rs. 15 per day per head. Members coming with their families are requested to stay in a hotel, Dharamshala (decent ones are about 1½ to 2 miles). Reception Committee will make necessary arrangements if previously informed.

S. N. BASU,
Organising Secretary.

CURRENT TOPICS

MEDICINE IN A CHANGING WORLD

Lord Boyd Orr of Brechin, M.D., D.SC., F.R.C.P. (LOND.), F.R.S. in an address after conferring of the Fellowship of Royal College of Physicians in Ireland on 5.4.49 said:

The advances in all branches of science are bringing about rapid changes in the social and economic structure of human society. The wireless and the aeroplane have made the earth smaller. Reckoned in terms of transport and communication, it is smaller than Ireland was a hundred years ago. Technology advancing at an ever-accelerating rate and cumulating in the release of atomic energy has put great new powers into hands of men. We can now produce in abundance the things men need for a full life. In 1946 the United States and Canada produced double the amount of industrial goods produced in 1938. The United States increased its food production 35 per cent with 25 per cent less labour.

The advance in the physical sciences has raised problems which are baffling the politician and the economist. We are now physically one world: but it is not a homogeneous world. Nations are divided by conflicting ideologies. Some have a high level of education: others are 80 per cent illiterate, and some, like the United States, are wealthy with a high standard of living while others like China and India are so poverty stricken that the average length of life, owing to lack of the primary necessities of life, is less than half that of Western European countries. The sudden jamming together of nations with such different political systems, religions, ways of life and stages of development raises almost insuperable problems in international politics. In this contracted world they must either learn to live at peace, co-operating with each other for their mutual benefit, or engage in a conflict with atom bombs and biological weapons of war to their mutual destruction.

In the economic field, the problems are as acute and interlocked with the political problem. The machines produce more and more with less and less labour. How can the products of the machine be dispersed and consumed to prevent unemployment leading to another economic crisis like that of 1930 which was the prelude to the second world war?

Such are the problems that the physical sciences have raised. The advances in medicine have been as great as those in the physical sciences and are bringing about changes, the importance of which are now beginning to be realised. When curative and preventive medicines are applied, the percentage composition of the population changes. As the average length of life increases, the proportion of old people rises. It is estimated that if the present trend continues, by the end of this century over 40 per cent of the population may be over 60 years of age. This ageing population presents both social and economic difficulties.

A change being wrought by modern preventive medicine which, in the opinion of some, threatens our civilization, is the rapid rise in the population of the world. Between 1880 and 1939 the population increased from 919 to 2,080 million. The increase was most rapid where preventive medicine was most practised. In Europe, the increase was 188 per cent, whereas in Africa, for example, where it was applied to only a relatively small part of the population, it increased by only 57 per cent. The world population is now growing at the rate of about one per cent per annum, giving an additional 22 million people every year. If the World Health Organization succeeds in the rapid elimination of preventive diseases, the rate of growth will be greatly accelerated. In an area in New Guinea when insect-borne disease were eliminated a few years ago, the fall in the death rate, especially of young children, has been so great that the rate of increase of the population has risen to 10 per cent per annum.

While the number of mouths to be filled is increasing, the area of the present fertile land producing food is decreasing through soil erosion. There are some who think that this problem of feeding an increasing population is insoluble. Vogt, the head of the Pan-American soil conservation service considers it so serious that the saving of life by modern medicine should be stopped until disease and famine reduce the population of overcrowded countries to which their land will support, and no assistance should be given to these countries until birth control is applied to limit the growth of population. Such a drastic measure to adjust population to the present food supply would be in direct conflict with the ethics of the medical profession. Nor indeed would it succeed. Hungry men don't die quietly. It was hunger following the bad harvest of 1788 that drove the mob of Paris to the frenzy of excess in the Revolution of the following year, and the people of Western Europe to revolution in the hungry forties of last century. Today the people of Asia, who for long accepted their hunger and periodic famine with resignation and apathy, are becoming as dynamic as the people of the west and rising in revolt against their hunger and poverty.

Thus the impact of science on human society has brought about a shrinkage of the world, throwing together nations with incompatible ideologies, with a resultant threat of another war, greatly increasing powers of production with supplies exceeding economic demand and the fear of another economic crisis, and a population larger than the present food supply can suport. This disorder in our civilization will not yield to treatment based on 19th century economic and political ideals. We are in a sick world. We need a new diagnosis such as a physician would make, to show the causes of the troubles and the remedial measures which can be applied. That would show that the great capacity for both agricultural and industrial production and the hunger and poverty of the world could cancel each other out and so cure both social unrest and the threatened economic crisis.

G.E.C. PRESENTS

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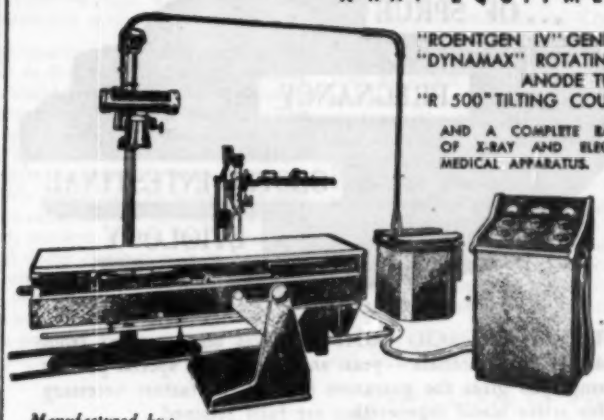

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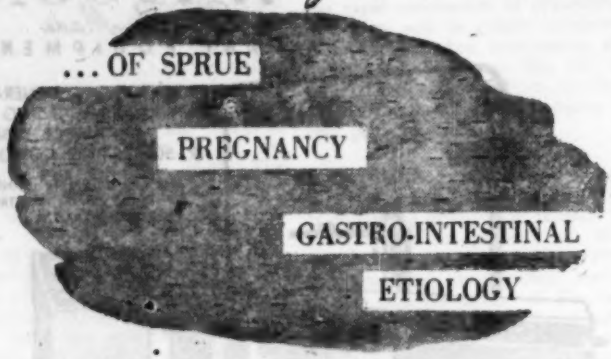

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The researches of the physiologist and the psychologist have shown that there is little difference in the innate physical or mental capacities of races. The obvious difference between European and Asiatics is due mainly to environmental differences. The common brotherhood of men as preached by ours and indeed by all the great religions, can become a reality through the recognition of the community of interests of all nations in this small world and the need for world unity.

If a sick world could be treated along these lines the fear of war or of another economic crisis which may lead to panicky action would change to hope for a new age of plenty, prosperity and peace which science has made possible—a hope which would lead to co-ordinated constructive action.

International association of scientists such as the International Council of Scientific Unions are seeking a solution to these world troubles by the application of science to the promotion of human welfare. The medical profession might well pay more attention to the world trouble. The medical profession has great influence. It is respected and trusted by people of all races and creeds. We might well as individuals and as a profession devote more time to the study of these great problems which modern science has raised and which must be solved if our civilization is to be saved from a catastrophe, and we should use our influence in support of every movement working for the application of modern science to the promotion of the welfare of the people and the "healing of the nations" through world unity—*J.M.A. Eire*, **25**:20, 1949.

NOTES AND NEWS

6TH INTERNATIONAL CONGRESS OF RADIOLOGY, LONDON

The 6th International Congress of Radiology will be held in London from 23rd—29th July, 1950. The Headquarters will be the Central Hall, Westminster, and meetings will also take place at the Church House and Caxton Hall. In addition there will be a Scientific Exhibition at the Central Hall, and a Technical Exhibition of apparatus in the Halls of the Royal Horticultural Society.

Those wishing to attend the Congress as Full Members (£7-7-0d), or as Junior Members (under 30 years of age on January 1st 1950—£4-4-0d.) must be members of a radiological society or sponsored by a radiological society.

Application should be made by form. Forms and information may be obtained from The Secretary, 6th International Congress of Radiology, 45 Lincoln's Inn Fields, London, W.C.2.

From this address details may be obtained regarding travel arrangements, demonstrations to take place in the radiological departments of London Hospitals, the submission of papers and exhibits, and the programme of tours to centres of interest in Great Britain.

INTERNATIONAL ANATOMICAL CONGRESS, OXFORD

The International Anatomical Congress will take place at Oxford from 25th—28th July, 1950. Application for membership should be made by form. Application forms, and information regarding travel arrangements, programme, and accommodation can be obtained from The Congress Organiser, International Anatomical Congress, 1950, Department of Human Anatomy, University Museum, Oxford.

SIXTH INTERNATIONAL CONGRESS OF PEDIATRICS, ZURICH

The 6th International Congress of Pediatrics in Zurich will be held from July 24th to July 28th, 1950, and from July 21st to July 31st the scientific exhibition, in which the World Health Organization will also take part. The languages admitted at the Conference are English, French, German, Italian, Russian and Spanish, but mutual understanding would be greatly facilitated by the use, as far as possible, of English or French. In the volume containing the lectures, contributions in English, French, German and Italian will be printed in the original languages. For technical and financial reasons it is not possible to publish the lectures given in Russian and Spanish; we request, therefore, the respective authors to enclose a translation in either English or French.

The exhibition guide and the conference programme will be printed in English and French.

UNIFICATION OF PHARMACOPŒIAS

The fourth session of the Expert Committee on the Unification of Pharmacopœias, held in Geneva from 20 to 30 April, 1949, was of particular importance in view of the decision taken for the publication of the first edition of the International Pharmacopœia, which was planned for 1949.

As with previous sessions, the work was devoted mainly to the study of monographs, reports on monographs presented by members of the committee, and general notices and appendices intended to be published in the first edition. Most of the 190 monographs were definitely accepted by the committee, a few being left to the Chairman and the Secretariat for minor changes. The texts of the following appendices were also adopted: reagents; test solution; solutions for volumetric determinations; identification tests; quantitative tests for lead; limit tests for heavy metals; limit tests for arsenic. A table of usual and maximal doses for commonly-used drugs was revised, and study was made of the means to be used, if necessary, for preventing the renewal of a prescription containing a dose in excess of the maximal dose. The Committee had also to decide upon the choice of a title for the work now nearly ready for publication, and the majority of the members was in favour of the title "International Pharmacopœia". The work will therefore bear this title when it is submitted to the Execu-

tive Board and the World Health Assembly.—*Chronicle of W.H.O.*, **3**: 120, 1949.

W.H.O. MATERNAL AND CHILD HEALTH TEAM

Miss A. S. Yliruokanen, M.D., Finnish specialist in the care of mothers and children, and Miss Brown, B.A., B.S. and M.S., American instructor in child nursing, arrived in New Delhi on Oct. 6 last from W.H.O. Geneva Headquarters. According to an announcement made by the W.H.O. Regional Office they will probably remain in India for two years giving specialist instruction to nurses and medical students, training local health personnel, and demonstrating modern methods of maternal and child health work.

The two experts, it is stated, will first spend some time getting acquainted with hospitals and nursing and medical colleges in New Delhi, and Indian health conditions in general. Later they will work in conjunction with a special maternal and child health team set up by the Indian Government. The areas of operation of the teams will be decided upon in consultation with the Director General of Health Services.

This is the first Maternal and Child Health Demonstration Team that W.H.O. has ever put into the field. The Indian Government has asked for a second in 1950. W.H.O. has already three malaria and one venereal disease control teams in operation in India.

Before joining the World Health Organisation, Dr. Ylirukokanen was Medical Officer to the Helsinki (Finland) City Public Health Department, and special consultant in maternity and child health centres. Miss Brown is from the staff of the University of Minnesota School of Nursing.

COLLEGE OF PHYSICIANS AND SURGEONS OF BOMBAY

Out of sixteen candidates who appeared at the D.G.O. (Diploma in Gynæcology and Obstetrics) Examination, the following eight have passed:—

Joshi, Jagannivas Kashinath; Palkhiwalla, Ruby Pirojshaw (Miss); Parakh, Navaj Dinshaw (Miss); Pratap, Bharatkumar Dhirajlal; Patel, Motiben Girdharlal (Miss); Samuel, Mary (Miss); Shah, Panalal Lalbhai and Shah, Radhakrishna Nandlal.

Out of eleven candidates who appeared at the D.C.H. (Diploma in Child Health) Examination, the following six have passed:—

Bhardwaj, Rudhister Dev; Dubash, Darab Burjorji; Kalambi, Mohan Sadashiv; Mehta, Gur Prem Pyari (Miss); Shah, Kanaiyalal Punjalal and Varadaraju Balagopalraju.

Out of five candidates who appeared at the D.P.B. (Diploma in Pathology & Bacteriology) Examination, Daswani, Harkishin Dalumal has passed.

Out of three candidates who appeared at the D.O.R.L. (Diploma in Oto-Rhino-Laryngology) Examination, Atre, Waman Ganesh has passed.

THE FELLOWSHIP FOR FREEDOM IN MEDICINE

The Fellowship for Freedom in Medicine, which was formed under the chairmanship of Lord Horder to work for amendment of the Act establishing the National Health Service, has attained a membership of 2,200. Speaking at a meeting when it adopted a constitution as a registered company and decided on future policy, Lord Horder said that they did not aim at repeal of the Act. The Health Service had achieved a certain momentum and at some points as in the regionalization of hospital services, there were clear improvements. But the Minister of Health had not yet introduced the Act which he had promised to secure doctors against the possibility of being made whole-time servants. Nor had he implemented his promise to submit new regulations. The Fellowship would press for that. For the "betterment factor" agreed by the Spens Committee the Minister had decided on a figure of 120 per cent while the actual increase was 185 per cent.

The meeting adopted a constitution as a registered company and decided on future policy. The following are among the registered objects. (1) To insist on the preservation of the highest standards of medical practice. (2) To protect the public and the medical profession from state monopoly in medicine. (3) To preserve the ethical and professional freedom of the individual doctor in the service of his patients and to maintain the status of the general practitioner, including his financial security. (4) To oppose all encroachments of the State on the independence of medical institutions and maintain the academic freedom of all teachers of medicine. (5) To define the limits of state medicine so as to protect the rights of the public and of the medical profession in relation to all types of independent practice. (6) To support and protect the character, status and interest of the medical profession generally.—*J.A.M.A.*

NOBEL PRIZE FOR PHYSIOLOGY AND MEDICINE

The Nobel Prize for physiology and medicine was awarded jointly to Dr. Rudolf Hess of Zurich University Institute of Physiology and Prof. Meritus Antonioegas Moniz of Lisbon University.

Prof. Moniz, world famous neurologist was the first man to cure a mental disorder by surgical operations. He performed this operation in 1935. Prof. Moniz, who is 75, is a former Portuguese Minister of Foreign Affairs and a former Minister to Madrid.

Dr. Hess, 68-year-old eye and brain specialist, has been director of the Physiological Institute at Zurich since 1947.—*Hindusthan Standard.*

CORRESPONDENCE

The Editor is not responsible for any views expressed by contributors

MALARIA PARASITES AND LEISHMAN-DONOVON BODIES—A SUGGESTION

Sir,—Before the discovery of L.D. bodies, two pioneer workers Ross and Rogers held kala-azar to be a kind of chronic malarial fever on clinical grounds and because malaria parasites were found in at least 80 per cent of cases of these kala-azar epidemics. Napier's observations are more sweeping: "Both these infections will be found in almost 100 per cent of the inhabitants of some districts in Assam." My observations were made in the flooded area of the Kosi river in North Bihar in 1939 under the Public Health Department of the Bihar Government and I had my difficulties also. I could not get a microscope or any laboratory help and the only substance I was given to aid me in the diagnosis was an ounce of formalin. So I had entirely to depend on clinical methods. The epidemic was "recent' at least not of many years' standing, and I found a good number of cases giving symptoms of malaria and clinically kala-azar and malaria symptoms merged into one another in them. Like Ross and Rogers I had to conclude that at least 90 per cent of kala-azar cases are associated with malaria and probably most of the rest also began as malaria. Ross and Rogers revised their opinions after the discovery of L.D. bodies by Leishman and Donovon. But I began to think and argue in a different way. Can these L.D. bodies be biologically transformed malaria parasites? Even taking into account that the sand-fly theory as the intermediate host of L.D. bodies or the vectors of K.A. in man and animals have been almost proved by Napier *et al* even remembering that sand-fly practically exists wherever there is kala-azar, the fact of association of malaria in such a big percentage,—almost in every case, cannot be ignored. So the conclusion becomes irresistible that not only Anopheles mosquito and sand-fly, but also malaria parasites and L.D. bodies live together. Even syphilis and gonorrhœa contracted from the same source are not probably associated in the same patient in such high percentages. How to account for this friendship and association? While M.P. is a sporozoa, an obligatory parasite the flagellate or leptomona form of the L.D. bodies need not invariably be so.

Zoologically L.D. bodies are trypanosomes and cousins of the parasites of sleeping sickness where they occur in the leptomona form in blood and cerebrospinal fluid—there is no Leishman-Donovon form. The reproductive non-flagellate form of the leptomona or its resting stage must not be confused with L.D. bodies which are neither encysted nor reproductive forms—for they do all the functions of the normal usual form of life cycle. Leptomona forms of the L.D. bodies of the kala-azar infection in human beings or animals have not yet been met with. Then again the complete life cycle of the flagellate is known and there is no special form in its life cycle in any intermediate host like the malaria parasites if we care to remember its non-flagellate reproductive and resting state. Thus the so-called "parasite form" of the L.D. bodies are highly suspicious. On the other hand, other classes of protozoa are known to have flagellated forms. Thus amongst Sarcodina—Rhizopoda, after fission and gamation the paramœba becomes resolved into the flagellate gamets which copulate in pairs with similar gamets. Then again amongst mastigophora or flagellate, "some of the lower forms have no distinct cuticle and are able under certain circumstances to assume an amœboid form. The curious genus mastigamœba has a permanently amœboid form but possesses in addition to pseudopods a single long flagellum. It obviously connects the mastigaphora with the Rhizopoda." Strong also notices it:—"Some flagellates more or less resemble Rhizopods in being amœboid and in having an ectoplasm and endoplasm." "In the parasite sporozoa, the class to which the M.P.'s belong, the young may be flagellate or amœboid." The very first M.P. seen by its discoverer, Laveran, was "in particular the flagellation of the male gamet" (sperm-form?) which demonstrated to him that these were living organisms. He proposed the name Oscillaria malariæ on account of the movements of the flagellate body. Schaudin's observations that, after entering the blood vessel through a mosquito bite the sporozoits quickly penetrate red cells have been refuted by modern observers on vary tangible evidences. "The parasites are not demonstrable in the circulation until after the lapse of at least several days. Because treatment of a patient with quinine during the first five days after the bite of the infected mosquito does not apparently reach and destroy the sporozoits and the sporozoits are not in the blood or corpuscles during this period. It has been suggested that they do not at once enter the red blood corpuscles." Experimental evidence by Boyd and Stratman-Thomas (1939) suggests that the sporozoits may undergo a preliminary period of development in the tissue before invading the blood cells and beginning active multiplication in them.

This exo-erythrocytic form of existence of the malaria parasites in the endothelial tissues have been closely studied by competent observers in birds, monkeys and human beings. This so-called cryptozoits have been practically demonstrated in the reticulo-endothelial tissues of man like the L.D. bodies by them. L.D. bodies and M.P.s have been found in the same field side by side from a sternal puncture of human patient. So from clinical and other data, I gathered at the kala-azar centres, I have reason to suspect that the L.D. bodies may ultimately turn to be biologically transformed malaria parasites. The reaction of the reticuloendothelial system in K.A. begins already in malaria as is shown by the increase of large mononuclear cells; only the manifestations in K.A. and malaria vary. But I cannot go into details just now. I understand the gravity of what I say. But given factors for natural selection, change of environment and mode of nutrition, there is no reason why Darwinian evolutions, and that in the different classes

of the same phylum in lowest forms of life,—the protozoa, should not take place even now. Again, it is not limited to Apes and Lemurs, Dianocerus and Balangocerus, but also to amœba and sporozoa and flagellata or trypansoma where these evolutionary change probably takes place more readily. In non-medical biology, these possibilities are being proved and I think works should be done in this respect in centres of allied medical research to see if the endothelial tissue forms of the M.P., the so-called cryptozoits, particularly, latter on, turn to be L.D. bodies. Nay, I believe, if some day I can avail the opportunity of a well-equipped laboratory in some big University College where I can utilise the assistance of learned authorities in Zoology, Botany, Biology and other kindred subjects and can consult as many books as I need from its well-equipped library, this hypothesis may not be impossible to work out. In the meantime other workers may look after this possibility. If this is what really happens, it may be, the toxins of certain strains of L.D. bodies developed out of plasmodium malaria (or virulent gamet forms of other M.P.s) may be responsible for night blindness in K.A., a possibility, I have discussed in my paper on "Night Blindness". M.P.s are already known to have been responsible for amblyopia. These groups of malaria parasites are the most resistant of all and least susceptible to quinine. They also produce nephritis in certain endemic areas thereby retarding the elimination of toxins and bile salts and aggravating the symptoms due to accumulation.—I am, etc.,

Banaras. RANAJIT SINGH SATYASRAY, L.M.S.

COLONIC IRRIGATION

Sir,—I shall be thankful if you kindly publish the following piece in your journal.—I am, etc.

TERENCE HEYWOOD.

Sussex, England. 5.5.49.

"A time to break down and a time to build up."
—*Ecclesiastes.*

Drain out the past, let it be sluiced away!
For you, nurse, with your inside information,
Knowing that pills are powerless to-day,
Can master this evacuation problem:
Pump out the poison, wash the waste away!
This is a colon: let there be no full stop!
"Bowels of mercies"? Let there be no mercy!
Open the flood-gates: let the human crop
Profit by irrigation, and internal
Dissension be encouraged—do not stop!
Burst through the barriers—clear the
obstructed way
Of traffic-jams and old accumulation:
Arterial roads must work without delay!
Health must have shelter: clean up the Inner Circle:
Pump out the poison, wash the waste away!

CANCER—NEW TREATMENT

Sir,—I have visited several cancer hospitals in different countries during my recent tour overseas. I had a chance of meeting Dr. J. E. Hett of Windsor (Canada) who has been working on cancer for the last 30 years and has succeeded in inventing a serum (as he describes it) in 1931. I saw many patients in his clinics, all of them were established cases of cancer; some of them had undergone surgical, radium or X'ray treatments and were given up cases as the patients described themselves. Some of these patients treated 5 or 6 years ago are still without relapse and all the rest are definitely improving. This made me to study his technique very carefully. I am putting his experience in this Journal if this could be of any use to the profession and further light be put in the treatment of the disease.

Special Serum Treatment (Dr. Hett's)—A fraction of a drop of the serum injected intravenously twice or thrice a week according to the severity of the case. Generally 30 to 40 injections are sufficient to cure an average case. Whenever necessary surgical help should be taken.

This serum was invented in 1931. Up to this day patients cured 6-7 years ago, have not got a relapse. This period is not sufficient to declare that one does not get a relapse hence Dr. Hett does not like to disclose the formula to the profession for fear of misuse. He has already given the formula to a commission appointed by the Canadian Government. He told me that he would give out the formula after another few years trial. He has already given the serum to some doctors in different countries to try on different species of people. He has also given me some quantity of the serum to be tried on Indians. If I.M.A. and our Government allow me to treat cancer patients with this serum, I would let the profession know the result through this magazine. No cost of the serum would be charged from the patient.—I am, etc.,

A. B. MUKHERJI,

Dalmianagar (Behar). *Chief Medical Officer.*

DOCTOR'S DILEMMA

Sir,—One November morning in 1944, just after leaving the bed I (H. Male, 27) felt a little sensation on my right cheek and to my astonishment saw a red patch about the size of a pice. By the same evening three similar patches were noticed on the tongue, just above the left corner of the upper lip and the top of the private part about ½rd, ⅓ and ¼th of an inch in diameter respectively. The only other trouble at that time was severe constipation for the last several days. I consulted some doctors at Moradabad. It was all attributed to constipation and for a few days I was recommended Agarol, Castophene, etc., all with no result. Later I was advised Ext. Cascara Sagrada liq. 1 dr. T.D.S. Within a few days I was relieved of the irritation but the red patches turned into light black which were washed off by the end of Feb. '45.

Again in November, '45 the patches reappeared with exactly the same colour, size and irritation. The same old reasons were attributed and treatment renewed

and the trouble was over within a few days leaving again the black patches to be gradually washed off. I was given enough of calcum gluconate i.v. and recommended to keep constipation away. But to greatest astonishment all the patches reappeared before the end of March, '46 inspite of my taking bed pills on the slightest constipation. No doubt the trouble took its usual course but the black marks which were already there were left still darker. This time I was given sufficient colloidol calcium injections and advised 12 yeast tablets regularly and Stearn's Bicolates on the slightest sign of constipation.

Inspite of all the treatment and precautions the patches appeared and reappeared several times before the end of June, '46, leaving the black marks darker and darker every time. During this period I was given about 20 injections Vit. C 500 mg. i.v. and 20 injections Calcium Sandoz 10 per cent 10 c.c. and 4 injections of autoblood with 200 mg. of vit. c.

I was most anxious to get rid of this trouble lest it may not spread to other parts of the body.

I consulted a few skin specialists at Delhi and New Delhi and consulted all the physicians at Lucknow. I may add that by this time I had the stool report and completely negative report for W.R. with me.

Along with a few skin bleaches I was advised Myocrisin, autoblood and autovaccine. A few months were given for this treatment but to no avail and the patches showed their ugly faces every now and then leaving my face uglier every time.

By Oct., '46, I had finished with all the treatments and had come to Stearn's Bicolates when constipative and magsulph followed by a castor oil enema and a day's fast on the appearance of the patches. By this treatment the patches began to disappear within a day but the release from their clutches seemed no nearer.

It was again in November, '46 that I noted that there is some relation between the Stearns Bicolates and the patches as during the above mentioned limited treatment I noticed that when the patches appeared I had taken Bicolates on the previous night. I concluded that some irritation is caused in the intestines by the bicolates and the hæmorrhage takes place on the susceptible points.

I explained my findings to my doctor who readily agreed with me and told me that it is phenolphthalein in the bicolates that irritates the intestines. It is two years I have not taken anything containing phenolphthalein and have not suffered from those red patches and the black marks left by them are practically washed off.—I am, etc.

Moradabad, 30.7.49. SHIVA SARAN GUPTA.

DRAFT MEMORANDUM ON INDIAN SYSTEMS OF MEDICINE BY I.M.A.

Sir,—In your Volume XVIII, No. 8, May, '49, on page 305, in the letter Sri G. D. Apte, M.B.B.S., commenting on Bhore Committee report has regretted that the Committee did not stress the utility of "pathya or parhej" of the I.S.M. according to the constitution of the individual.

I have heard similar sentiments being expressed once by Dr. M. V. Krishna Rao, B.A., M.B.B.S., in a provincial medical conference at Vizag. Anyway there seems to be a widespread impression among our doctors practising the scientific system of medicine that there is a lot to be learnt by us from Ayurveda about that magic word "Pathyam". Sir! Is it not necessary to remove that feeling of inferiority based on a temporary clouding of their minds by reminding them that with our knowledge of metabolism and its disorders with our knowledge of calorific needs, and the constituents of the ideal food and the average daily bodily need of starch, protein, fats, vitamins and minerals of people of all ages, both sexes and of pregnant women in health and in disease, with our knowledge of allergy and idiosyncrasy, and with our knowledge of pathology we are today better placed to prescribe and to regulate the diet of a person in health and disease or the food of a nation in peace or war, than any of the founders or promoters of Ayurveda had ever been? Thanks to our pharmaceutical industries which have placed in our hands glucose, casein hydrolysates, individual vitamins and their factors, and enzymes our task of prescribing the diet of a person in any state, is easier and on a firmer ground. With our capacity to supplement the oral intake of diet of a person, if necessary by rectal or intravenous routes with suitable preparations to ensure adequacy also, the patients problem of *pathyam* is more completely and efficiently solved in our hands. So I request you to use your powerful editorial columns to explode the myth of the belief that the ayurvedic vaid can direct *pathyam* or *parhej* more efficiently than us and also to impress on doctors practising modern scientific system of medicine that they cannot gain anything by acquainting themselves with the data on *pathyam* as narrated in Ayurveda texts, which are based on tridosha siddhanta and on their queer belief that some food substances are "heating" and some are "cooling" to the body and that word "heat" as used by them is not "heat" which we read in physics as a form of energy that can be measured in degrees or calories.—I am, etc.

M. V. RAMA RAO, M.B.B.S.

Sitapati Clinic, Tekkali,
(Vizag. Dist.). 20.8.49.

AN ENQUIRY

Sir,—Can you please enquire through the Journal whether penicillin injection upto 18 lac units within 96 hours for a case of breast absess (threatened) in a prima, about ½ week after delivery is likely to produce severe tympanitis, flatulence and colic with fever in the healthy baby which had weighed 8 lbs. at birth—even when it was being fed on sound side only.—I am, etc.

CAPT. M. G. OKA, L.M. & S., B.M.S. (RETD.).

Telak Road, Sadashiv Peth,
Poona City. 30.8.49.

CURRENT MEDICAL LITERATURE

Vitamin B_{12}

The successful isolation of B_{12} from liver by the research laboratory of Merck and Company and almost simultaneously by the Glaxo Laboratories in England constitutes a milestone in the story of anæmia. B_{12} is apparently the active principle in liver and liver extracts and is so powerful that five to ten thousandth of a milligram will produce a therapeutic response in pernicious anæmia.

The discovery that liver contained some active substance which caused remissions in pernicious anæmia was followed by the extraction of a water soluble substance by Cohn in 1927, known as "Fraction G". The crude extract first contained only one or two units per cubic centimeter, but more refined extracts containing ten to fifteen units per cubic centimeter were later prepared.

The preparation of folic acid and the discovery that it too produced remissions in pernicious anæmia was a further step in the study of the therapy of the anæmias. Its failure in the prevention or successful treatment of neurological changes accompanying pernicious anæmia did not permit its substitution for liver therapeutically. Folic acid, however, has been of special value in the treatment of other anæmias such as that accompanying sprue, atypical macrocytic anæmia, the pernicious anæmia of pregnancy, and megaloblastic anæmia of infancy. In these conditions response to folic acid is often better than to liver.

B_{12}, being the active factor in liver extracts in the treatment of pernicious anæmia has the same preventive and curative qualities in the treatment of neurological complications. It is non-toxic, and intramuscular and subcutaneous injections are not accompanied by pain, both routes of administration being equally effective. It should be noted, however, that so far there has been no experience as to possible deleterious effects following the administration of large doses over a long period of time.

The dosage of B_{12} is 10 to 15 micrograms hypodermically or intramuscularly, once or twice a week until remission occurs. Five micrograms once a week seems sufficient for maintenance. Inasmuch as patients' needs vary, larger doses (25 micrograms) once or twice a week are occasionally needed.

Extracted originally from liver, B_{12} is now obtained commercially as a by-product from Streptomyces griseus and has been found to contain cobalt in minute amounts. The significance of the cobalt content affords a field for further investigation. Therapeutic iron is said to contain traces of cobalt. On the other hand, the giving of cobalt to pernicious anæmia patients has not proven effective.

The main significance of the availability of B_{12} for the practitioner lies in the fact that he now has a substitute for liver extracts for use in patients sensitive to these extracts. Until the cost of B_{12} is reduced and it is available in larger quantity, liver extracts will continue to be the remedy of choice in the treatment of pernicious anæmia. Whether B_{12} eventually replaces liver remains to be seen.

It is just as illogical and unnecessary to administer B_{12} for secondary types of anæmia as to prescribe liver. The unwarranted use of liver extracts for secondary types of anæmia and a multitude of other conditions does not speak well for the knowledge or intellectual honesty of the profession and does not consider the patient's pocket-book. In secondary types of anæmia, iron is indicated.—*Minnesota Med.*, Ed., **32**:636, 1949.

What causes Gas?

Alvarez (*Iowa State M. Soc. J.*, **38**:1948, Ref. *J.A.M.A.*, **140**:358, 1949) has studied for thirty-five years the question of what causes flatulence. It involves interference with the normal absorption of gas from the bowel. Much of the gas in the bowel is swallowed air. Much appears to come out suddenly from the blood. Some is formed during digestion. In the healthy person gas formed in the bowel is rapidly picked up by the blood and excreted by the lungs. The three main gases in the bowel are nitrogen, oxygen and carbon dioxide. The first causes the most distress because it is absorbed slowly. Gas or swallowed air goes through the bowel rapidly and painlessly if there is no spasm anywhere. Spasm is more likely to be associated with the gas produced by food allergy. The physician must make sure what the patient means by "gas". Does he belch, or bloat or pass gas? Belching often repeated is a neurosis associated with the swallowing of air. There is also a pseudobloating, hysterical in nature, and not due to gas. True bloating can be due to eating, to being hurt physically, to taking a nap or to constipation. An excess of flatus may be due to swallowing air, to indigestion, to constipation or to eating more food than the bowel can handle or to eating certain gas-making foods. Flatulence can be produced by any disease that interferes with the circulation, with the functions of the liver or the lungs. It is seen with cholecystitis, diarhœas, duodenal ulcer, constipation, hæmorrhoids, intestinal obstruction, mucous colic and the eating of a rough or flatulent diet. Drugs frequently fail in the treatment. A patient may be helped with a smooth diet, a light diet or diet without foods to which he is allergic. Some persons are relieved if they keep the colon clean with enemas.

Pain in Left Chest

Schott (*Med. Press*, **220**:470, 1948) points out that in many cases of pain in the left chest, the first point to decide is whether or not the symptom is of cardiac origin and, in particular, if it is anginal in nature. The symptom of angina is not necessarily indicative of structural disease of the coronary arteries. It is true that the great majority of such patients have some form of structural coronary disease—*i.e.*, coronary sclerosis or syphilitic narrowing of the coronary orifices—but it should be borne in mind that angina may be produced by myocardial ischæmia without structural coronary disease. Thus it may occur during attacks of paroxysmal tachycardia, owing to the altered mechanism of blood flow through the coronary bed, in advanced anæmia or severe blood loss, and in certain extracardiac diseases. The author suggests that the simulation of coronary thrombosis by pulmonary embolism is probably due to a pulmonary reflex, resulting in coronary vasocontriction *via* the vagus, superimposed on sudden strain of the right ventricle. In chronic disease of the gallbladder not only is the chest pain of the same character and distribution as the anginal pain due to structural coronary disease, but there is also evidence that the heart action is affected by the diseased gallbladder by way of reflex.

Another abdominal condition which may give rise to anginal pain most probably by way of reflex is diaphragmatic hernia. Among the extracardiac conditions giving rise to pain in the left side of the chest, those arising from the spine form an important group. Osteoarthritis of the cervical portion of the spine may closely simulate pain of cardiac origin. Occasionally lateral protrusion of the ruptured intervertebral disk between the sixth and seventh cervical vertebræ, with compression of the nerve roots, may produce pain in the chest which if the lesion is left sided, may be mistaken for anginal pain, and if it occurs suddenly and is severe, for coronary thrombosis. Pain referred from the upper dorsal vertebræ as the result of impairment of alinement in a costovertebral joint may also simulate anginal pain. Several case histories are presented to illustrate the simulation of anginal pains by the aforementioned conditions. The author says that this is only a small selection of the great variety of conditions which may be mistaken for angina pectoris even by experienced physicians.

Clinical Significance of Right Axis Deviation in Electrocardiogram

Oaning (*Nordist. Med.*, **40**:2089, 1948, Ref. *J.A.M.A.*, **140**:257, 1949) says that examination of the electrocardiograms of 7,700 patients revealed right axis deviation in 245. In patients with heart disease it appeared most often in mitral stenosis, 60 cases, and in congenital heart disease, 9 cases. In mitral stenosis it was greater in the patients with auricular fibrillation and in those with decompensation. Right axis deviation increases if the heart disease is intractable and tends to increase with the duration of the mitral stenosis, is somewhat more pronounced in cyanotic than in noncyanotic patients in congenital heart disease and is less marked in cases of hypertension than in case of mitral stenosis. Right axis deviation in the electrocardiogram of patients with various pulmonary diseases appeared more often in cases of chronic disease and was rare in acute pulmonary disease; of the 28 patients with pulmonary disorders 13 had chronic bronchitis. Fifty patients with right axis deviation had gastrointestinal disorders, especially peptic ulcers. Twenty-three patients with right axis deviation, of whom 19 were under 40, had various internal diseases.

Fibro-Fatty Tissue and Certain "Rheumatic" Syndromes

Copeman (*Brit. M. J.*, **2**:192, 1949) writes that it is thought that an aetiological classification, although desirable in the case of a "disease entity", must remain impracticable in the case of a syndrome. The classical conception of fibrositis is briefly reviewed, and a classification based upon the structure of the nodules found at the source of the pain is tentatively proposed.

Evidence is produced that the fat tissues of the body are subject to pathological variations which cause pain. This pain is generally labelled as "rheumatic" or "fibrositic". When this occurs in the neighbourhood of joints the condition is often wrongly termed arthritis.

It has been shown that several recognizable "rheumatic" syndromes can be the result of an abnormal retention of fluid by fat lobules in certain situations. When this occurs they endeavour to swell, but, being confined by indistensible fibrous tissue, they are unable to do so, and tension pain results. This shows no signs of being inflammatory in nature.

In some such cases a flaw occurs in the fibrous covering, resulting in herniation of the enclosed fat lobule into an adjoining layer. Such herniations may be of three types, which are described.

The origin of this selective swelling is probably endocrine. The direct effect of cold may unmask it.

The syndromes described as being due to this abnormality of fat are: (*a*) "fibrositis", which occurs in any of the several normally occurring fat-pads which are described, and (*b*) panniculitis, which occurs in abnormally deposited fat, mostly in predictable sites. Panniculitis may occur with or without general obesity. In either case the chief sites of pain tend to remain similar. Adiposis dolorosa (Dercum's disease) would appear to be only a quantitative variation of this combination.

Treatment must be directed concurrently along several lines if success is to be achieved. Those discussed include diet, endocrines, diuresis and dehydration, local injections, physiotherapy, and surgery.

The indications for surgery are limited but tend to afford dramatic relief. These are the removal of irreducible fat hernia, and to a smaller extent removal of localized areas of painful tissue in severe cases of panniculitis.

Salt Substitutes and Lithium Poisoning

Lithium chloride has been put forward as a salt substitute for use with diets from which sodium chloride is partly or completely absent. From the point of view of palatability it is apparently satisfactory, as it has a taste similar to that of table salt, but serious doubts have been recently raised as to its safety. Four separate communications on the subject have appeared simultaneously. In the first of these, Corcoran, Tayor and Page (*J.A.M.A.*, **139**:685, 1949) report seven cases of lithium intoxication, in two of which they feel that the intoxication was probably a contributing cause of death. At first it was not quite appreciated just what was happening, but the evidence seems clear enough that lithium was primarily responsible for the effects observed, and not sodium depletion; on the other hand, sodium depletion apparently increases the susceptibility to intoxication from orally ingested lithium salts. The symptoms observed were, in order of appearance, tremor, muscle twitches, apathy, difficulty of cerebration, blurring of vision, confusion and finally coma, and in two cases of the seven, death. Objective effects were reflex hyperirritability, muscle fasciculation and hyperirritability of muscles to galvanic stimulation. These symptoms and signs are not unlike those described by Cleveland in 1913, when he reported an experiment in lithium intoxication which he performed on himself. The most notable point is that the amount of lithium chloride taken by Cleveland in one day was much greater than that ingested by the patients discussed by Corcoran and his colleagues, a point which strongly supports the suggestion that sodium depletion increases susceptibility to lithium intoxication. Another point which may be significant is the fact that, among the seven patients, those who showed severe manifestations had advanced cerebral arteriosclerosis.

In the second report, L. W. Hanlon, M. Romaine, F. J. Gilroy and J. E. Deitrick (*Ibid*, **130**:690, 1949) discuss four cases in which lithium chloride caused toxic effects of the type already described. In one case the patient, who was in "a precarious state of cardiac decompensation", ingested an excessively large amount of lithium chloride in his diet and the opinion is offered that this contributed to, if it did not actually cause, his death. Two important points are brought out in this paper: firstly, that although small amounts of lithium chloride may be taken by many patients without apparent harm, there is a real possibility that patients whose salt intake is restricted may use dangerously large amounts of lithium to satisfy their craving for salt; secondly, that it is difficult to counter the toxic effects of lithium in a patient already severely ill and no means is known of hastening its excretion from the body.

The third report, presented by R. L. Stern, concerns an elderly male patient who was undergoing normal convalescence. He had arteriosclerotic heart disease with slight cardiac hypertrophy and moderate congestive cardiac failure. He was found during convalescence to have slight œdema of the feet and an increase in congestion at the bases of the lungs, and was given therapy to eliminate excess body fluid as well as a diet of low sodium content and a lithium chloride preparation as a salt substitute. He developed signs of lithium poisoning and very nearly died; on withdrawal of the lithium preparation and administration of adjuvant therapy he recovered rapidly and completely.

Finally, A. M. Waldron, in a letter (*J.A.M.A.*, **130**:733, 1949) as the other three contributions, refers to four patients who developed effects of the type mentioned as a result of ingestion of a salt substitute containing lithium chloride. The symptoms disappeared after withdrawal of the salt substitute and did not recur. Waldron emphasizes, as do all the other investigators, the need for the practitioner to be aware of the toxic effects of lithium and to be on the lookout for them. Other salt substitutes are not without their hazards; some, for example, contain potassium, which may be toxic to patients with renal insufficiency, but lithium chloride appears to present an important problem. It seems reasonable to suggest not only that physicians should exercise care and constant supervision when it is in use, but that they may well think twice before prescribing it at all. Many patients virtually deprived of salt become remarkably tolerant of their insipid diet. (*Med. J. Australia*, **2**:175, 1949).

A New Treatment for Rheumatoid Arthritis

Rheumatoid arthritis is known to have existed in prehistoric times, and the search for a cure has presumably continued ever since. In the course of time much information has accumulated about the natural history, pathology, and the provocative factors of the disease, but since the waning of belief in an all-important infective factor little certain information exists about its aetiology. In his recent Oration before the Heberden Society in London, Dr. P. S. Hench reiterated the known facts and pointed out that rheumatoid arthritis has two sharply contrasting characteristics—that of potential chronicity and that of potential reversibility. He divided the causes of reversibility into spontaneous, therapeutic, and accidental. Spontaneous remissions have always been recognized as a possible occurrence even in cases in which the prognosis seems hopeless; therapeutic remissions can be induced in a proportion of cases by means of gold therapy or blood transfusion; whilst accidental remission may frequently occur in pregnancy and in jaundice of certain types.

Consideration of these facts makes it increasingly difficult to harmonize the microbic theory of the origin of rheumatoid arthritis with modern knowledge. It seems more probable that the disease is part of a basal biochemical disturbance of unknown type which is accidentally and transiently corrected by some biological change common to a number of apparently unrelated conditions—pregnancy and jaundice being the most notable. Hoping to reproduce the beneficial effects of pregnancy, physicians have administered fairly large doses of female hormones to non-pregnant sufferers from rheumatoid arthritis, but the results have mostly proved to be disappointing, as has the employment of transfusions of blood from pregnant women —a form of therapy which was recently advocated (Barsi—*Brit. M. J.*, **2**:252, 1947).

Last year workers at the Mayo Clinic put forward the conjecture that the anti-rheumatic factor might prove to be one of the adrenal hormones. Recent work by Selye (*J. Clin. Endocrinol*, **6**:1171, 1946 and *Ann. Int. Med.*, **29**:403, 1948) and others on the biochemical changes induced in animals exposed to a wide variety of noxious agents has shown that the changes vary with the intensity and the duration of the stress but are independent of its nature. This has been termed the "general adaptation syndrome," and has been shown to be due to excessive secretion by the anterior pituitary gland of corticotropin, which in turn stimulates increased adrenocortical secretion. Continued application of the stress is accompanied by continued hyperactivity of the hypophysio-adrenal mechanism, and for a time there is high resistance to the particular agent used and increased susceptibility to all others. Ultimately all resistance breaks down when the adaptive energy is exhausted.

Interest in this syndrome was aroused when Selye pointed out that it lent itself to a concept of "adaptation diseases". By various experimental procedures he produced in animals changes in the joints and the heart similar to those observed in human rheumatism, and concluded that "the adrenal cortex may play an important role in the pathogenesis of rheumatic and rheumatoid conditions in man!" (*J.A.M.A.*, **124**:201, 1944). Further experiments have shown that the essential requirement to enable these and other pathological changes to be brought about is an excess of salt-active corticoid hormone. This would suggest that during the phase of resistance the increased corticoids, which are normally beneficial, are capable in certain circumstances of producing recognized disease syndrome. Knowlton (*Endocrinol.*, **38**:315, 1946), searching for the modifying factors which in most cases presumably prevent the effect of stress resulting in "adaptation" disease, suggests that such disease is the result of a dual mechanism, the one factor being the non-specific effect of corticoids and the other a property specific for the given stress and the determinant of the site of the effect.

In September, 1948, Kendall was able to provide for Hench and his colleagues at the Mayo Clinic a supply of 17-hydroxy-11-dehydrocorticosterone (compounds E) for clinical trial (*Proc. Mayo. Clin.*, **24**:181, 1949). This was administered to a female patient, aged 29, who had severe

GONADOTROPIC *Hormones*

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Nicotinic acid	...	20 M.Gms
Liver Conc.	...	45 „

Indicated in all types of Macrocytic anaemia, Vit. B Deficiency and Sprue.

The Folic acid concentrate which is added to this product is obtained from fresh liver. The concentrate contains Folic acid in the free as well as in the conjugated forms. In addition to this, the Folic acid concentrate is also rich in all the other compounds of the Pterine class which play an important role in blood regeneration.

The Liver extract fraction is extremely rich in the anti-pernicious anaemia factor and all the other secondary factors like Tyrosine, Xanthine and certain peptides. In addition to this, B-Folin is reinforced with synthetic Vitamins of the B-Complex group. B-Folin should therefore prove very useful in all types of Macrocytic anaemias especially those associated with sprue. It can definitely be given with very good effects in cases of pernicious anaemia.

Procurable everywhere from all the leading Chemists or apply to Manufacturers

Navaratna Pharmaceutical Laboratories,

P. B. No. 13, Mattancherri, P. O. Cochin

rheumatoid arthritis for 4½ years. She had not responded satisfactorily to any method of treatment, and many joints were swollen, stiff, and very painful on any movement. Radiographs disclosed severe destructive changes in her right hip and less severe lesions in other joints. The blood sedimentation rate was 108 mm. (Westergren), and the patient's condition appeared to be deteriorating. On September 20, 1948, she could hardly get out of bed, and on that day intramuscular injections of compound E were started in daily doses of 100 mg. No change was noted until September 30, when she rolled over in bed for the first time with ease and reported much less muscular stiffness and pain. On the next morning all muscular stiffness had left her, her appetite returned, and she was able to walk with only a slight limp. By the seventh day of treatment all tenderness and pain on movement and even swellings were greatly lessened. The next day she went out shopping for three hours, returning tired but with no stiffness or pain. The progress made by this patient was for various reasons not fully maintained, but since then a total of 14 other cases have been treated, in all of which considerable and rapid improvement has been noted. Since January, 1949, compound E acetate, a more easily prepared and less expensive product, has been used in place of compound E, with equally good results.

Two female patients with severe rheumatoid arthritis were also treated with 100 mg. of pituitary adrenocorticotropic hormone (ACTH) intramuscularly for 12 days. The results of metabolic studies on these patients have yet to be published, but it is reported that clinical improvement similar to that resulting from the use of compound E occurred promptly in both.

The number of patients so far treated by this new method is small. This is due principally to shortage of supplies of the hormone; great efforts have been made to overcome this, but the technique of preparation is difficult, time-consuming, and expensive. As a control experiment the injections of compound E were at times, unknown both to the patient and the administrator, replaced by an inactive solution. When this was done articular and muscular symptoms recurred within a few days, and the sedimentation rate rose in every case. No serious toxic reactions have been noted as the result of administration of compound E or its acetate, with the exception of transient œdema. Nevertheless much more experience is needed before sufficient knowledge will be acquired about its efficacy and safety with prolonged administration.

The effects of related compounds such as dehydrocorticosterone (compound A), 17-hydroxycorticosterone (compound F), desoxycorticosterone (DCA), and pituitary adrenocorticotropic hormone (ACTH) are being investigated by Hench and his colleagues. Some years prior to the recent war a small-scale trial of the effect of desoxycorticosterone on rheumatoid arthritis was carried out by the Empire Rheumatism Council in this country, with negative results, but, so far as is known, none of the other compounds mentioned have yet been applied to the treatment of the rheumatic group of diseases.

It would appear from the information so far available that a therapeutic discovery of the greatest importance has been made. It is of course unfortunate that the amounts available of both compound E and of the adrenocorticotropic hormone are so small, and are likely to remain so until these substances can be synthesized. However, arrangements are in hand for a thorough trial in this country when supplies are adequate.—*Brit. M. J.*, Ed. **1**:813, 1949.

Studies of Cerebrospinal Fluid in Meningitis and Poliomyelitis

Joyce and Wells (*Minnesota Med.*, **32**:608, 1949) give in the following lines the summary of their observations:

An attempt at evaluating certain common laboratory procedures has been made in connection with a selected series of meningeal inflammatory conditions, including seventy-two cases of acute purulent meningitis, fifteen of tuberculous meningitis and 122 of poliomyelitis.

The N. intracellularis was the most frequent causative organism in our series of acute purulent meningitis and accounted 51·3 per cent of the cases. The pneumococcus was found in 23·6 per cent, H. influenza in 15·3 per cent, streptococcus in 6·9 per cent and staphylococcus aureus in 2·8 per cent.

In the group of acute purulent meningitis, the total cell count was above 1,000 per cu. mm. in 90·3 per cent of cases, while in the tuberculous meningitis 86·8 per cent ranged from 50 to 500 and in 93·4 per cent of the cases of poliomyelitis the total cell count was below 200 per cu. mm. In no instance of tuberculous meningitis or poliomyelitis was the total cell count over 1,340, the perdominant range of the acute purulent meningitis. However, in 2 per cent of the latter cases the count was below 100.

In conclusion, a total count of over 2,000 per cu. mm. is almost certainly caused by one of the bacteria other than the tubercle bacillus. Rarely, these same bacteria may give rise to a meningitis in the early stages of which the total count is less than 100.

We found that only 8·3 per cent of the acute purulent meningitides had a lymphocyte count above 15 per cent of the total cell count. Of these, one case due to H. influenza had a total cell count of 306, while in the five cases due to N. intracellularis it ranged from 3,100 to 7,225. In only 3·3 per cent of cases of poliomyelitis was the lymphocyte count below 15 per cent of the total cell count. In these three cases the total cell count ranged from 152 to 333. This, we believe, reflects the predominance of the neutrophile in the very early stage of the disease. In the tuberculous meningitis series, the lymphocyte count ranged from 72 to 98 per cent.

In conclusion, a differential count with more than 15 per cent lymphocytes greatly favors inflammations due to the tubercle bacillus or the poliomyelitis virus. These two groups hardly ever have fewer lymphocytes, but the acute suppurative meningitides occasionally do have more than 15 per cent lymphocytes. In the latter, however, the total count would in the great majority of cases be over 2,000 per cu. mm.

In our series of acute purulent meningitides, the total portion was between 100 to 500 mg. per 100 c.c. in 76·4 per cent of cases. In 93·3 per cent of the tuberculous meningitis it ranged from 100 to 500, and in only 5·8 per cent of poliomyelitis did it range from 100 to 500. In the latter group, 45 per cent had a normal total protein.

In conclusion, quantitative protein determinations may be of some value in differentiating poliomyelitis from the other two causes of meningitis, but must be interpreted with care in the early cases of meningitis.

The chloride content was below 700 mg. per 100 c.c. in 84·7 per cent of the acute purulent meningitides. In tuberculous meningitis it was below 650 in 80 per cent of the cases. None of the 122 cases of poliomyelitis had a spinal fluid below 646.

In conclusion, the low chloride content of spinal fluid is of distinct differential value in distinguishing tuberculous meningitis from poliomyelitis. A level below 600 is almost certainly the result of the former.

The sugar content was 40 mg. or below per 100 c.c. in 73·5 per cent of the acute purulent meningitis, and in 93·4 per cent of the tuberculous meningitis. Only 5·7 per cent of the cases of poliomyelitis had a sugar content below 50 mg. per 100 c.c.

In conclusion, tuberculous meningitis can be differentiated with fair certainty from poliomyelitis by the almost uniformly low spinal fluid sugars in the former, and a level above 50 mg. per cent in the latter.

The combination of a total cell count between 25 to 500 with a predominance of lymphocytes, an increased protein with a decreased sugar and chloride content, is rarely seen in any other inflammation of the brain and its meninges except in tuberculous meningitis.

Pathogenesis of Essential Hypertension

Smirk (*Brit. M. J.*, 1:791, 1949) giving the summary of his observations on pathogenesis of essential hypertension writes:

It seems probable that there is no single or simple primary cause of essential hypertension.

It is thought that the disorder may originate in some cases from the simple overactivity of physiological processes, whereas in other cases pathological changes such as renal arteriolosclerosis may be primary.

It is suggested that the blood-pressure increases are of composite origin but that these increases if frequent, high, or prolonged enough, give rise to a number of pathological and functional changes which tend to maintain or elevate the blood pressure further. Once this self-perpetuating cycle of changes has been set up the condition may be described as essential hypertension. Under-average blood pressures are associated with a much decreased incidence of essential hypertension in later life. It is difficult to explain this protective influence of low blood pressure except by the hypothesis that the tendency to develop high blood pressure in later life is influenced strongly by the precise level of the blood pressure even when this lies within the normal range.

Examples of factors various combinations of which may raise the level of the blood pressure enough to enhance strongly the liability to the subsequent development of essential hypertension include: certain geographical environments, race, heredity, emotional liability or disposition to over-alertness and tenseness, occupations or domestic environments involving a tendency to stress and strain, over-average liability of the vasomotor system to respond by vasoconstriction to tenseness and emotion, physical activity or metabolic stimuli, over-average body weight or sthenic habitus.

Elevations of the basal pressure are likely to throw greater strain on the heart and on small arteries and arterioles than are elevations of the supplemental pressure.

The degree to which blood vessels are able to withstand exposure to over-average blood pressure or vasoconstriction without undergoing pathological change varies from one individual to another and is likely to have an important influence both on the rate of increase of the blood pressure and on the development of complications.

Examples of a number of pathological and functional changes which in various combinations it is thought might be responsible for further elevations of the blood pressure are cited and discussed in the text. These include: (*a*) inelasticity of large arteries; (*b*) exaggerated contraction of hypertrophied arterioles; (*c*) the release of pressor agents from ischaemic kidneys; (*d*) to a very minor degree, increased passive resistance of hypertrophied arterioles; and (*e*) an unknown non-renal factor or factors capable of perpetuating certain blood-pressure increases after the primary exciting causes of these increases have ceased to operate. Other factors are referred to which probably contribute increments of pressure increase.

The fundamental unity of the clinical picture in essential hypertension is not dependent upon the blood-pressure elevation being regarded as the result of a single or simple pathological process. It is due to the fact that the clinical manifestations and complications are due almost entirely to events which are secondary to a single characteristic of the disorder—namely, high blood pressure brought about mainly by vasoconstriction.

The above general hypothesis holds that elevations of blood pressure in man and certain other mammals tend to be self-perpetuating. It is to be expected, therefore, that the cycles of changes concerned in the secondary elevations of the blood pressure which occur in essential hypertension will be responsible in part for the perpetuation, and perhaps for the further increase, of blood pressure in certain other conditions such as post-toxæmia of pregnancy, cortical hyperadrenia, and some cases of chronic pyelonephritis, medullary hyperadrenia, and chronic nephritis.

There is evidence suggesting that malignant hypertension is something other than an accelerated form of benign or essential hypertension.

The Spleen and Splenectomy

Scott (*Brit. M. J.*, 1:1063, 1949) in this review has attempted to show that with the exception of two mechanical disturbances—rupture and thrombosis of the splenic vein—the indication for splenectomy is an imbalance of the delicately poised equilibrium between the hæmopoietic functions of the bone marrow and the inhibitory and hæmolytic activities of the spleen. This may arise from a primary splenic disorder or be secondary to many forms of splenomegaly; it may be due to hypoplasia of the bone marrow or to the production of malformed red blood cells; it may affect the erythrocytes, the granular cells, or the platelets, severally or concurrently. In every variety splenectomy may restore the blood to normal and the patient to health.

SUPPLEMENT
Journal of the Indian Medical Association

VOL. XIX, No. 3 CALCUTTA DECEMBER, 1949

ASSOCIATION NOTES

BASTI BRANCH—Proceedings of the meeting held on 27th March, 1949 at 4 p.m. at the residence of Dr. S. D. Saharia, D.M.O.H. Basti.

A list of Plague inoculation centres was prepared and circulated.

* * * * *

An urgent meeting of the I.M.A. Basti Branch was held at 5-30 p.m. on 2nd May, 1949 at the residence of Major J. N. Jaswal, under the latter's presidentship.

Dr. Das, the D.I.G. of Public Health and Medical Services U.P. was present as a distinguished guest.

Dr. S. D. Saheria gave a graphic description of the cholera epidemic situation of the district and held out hopes that shortly everything will be quiet and there need be no occasion for any more panic.

Dr. Das was kind enough to give us a lot of time and took pains to explain to the members so many so called anomalies in the service conditions specially related to the P.S.M.S. Officers, anomalies in the scale of allowances and conditions available to the Licentiates for the condensed degree course and also so many schemes of health insurance and other important topics of the day.

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An ordinary meeting was held at 8 p.m. on 15th June, 1949 at Dr. R. N. Pandey's residence under the Presidentship of Major J. N. Jaswal.

Two clinical cases were demonstrated by Dr. S. C. Sharma. All the members took keen interest in the discussions and suggestions that centred around these cases.

Re Circular No. U.P. 39/48-49—There is no private Lady Doctor in this district so the question does not arise. But in this connection the question of the representation of the I.M.A. on the local Hospital Advisory Committee was taken up by the Hony. Secretary, who pointed out that the existence of Dr. K. D. Tripathi on this Committee as a representative of I.M.A. Basti Branch on the recommendation of the Civil Surgeon and District Magistrate was not correct. Therefore he proposed that to avoid unnecessary complications, the I.M.A. Basti Branch may now confirm him as their representative on the Basti District Hospital Advisory Committee. The proposal was carried unanimously.

Then the members rose to the sumptuous dinner offered by Dr. R. N. Pandey whom the members thanked in the end.

* * * * *

An ordinary meeting was held at 6 p.m. on 4th July, 1949 at Walterganj under the Presidentship of Major J. N. Jaswal. Dr. N. L. Bhatia was At Home.

Clinical cases demonstrated by Dr. K. D. Tripathi, Dr. K. L. Srivastava and Dr. N. L. Bhatia.

Dr. K. D. Tripathi raised the question of legal implication involved in the compounder, nurses, dressers, etc. giving injections of all kinds to the patients inside the hospital and outside the hospital. Main questions were:

The Secretary was advised to refer the matter to the Hony. Provincial Secretary for favour of throwing light on the subject. The Civil Surgeon, however, said that he and his staff used to allow their competent compounders, dressers, nurses, etc. to give injections to patients.

Major J. N. Jaswal also divulged the news that the Hon'ble Minister of Health in his recent visit to Basti had promised to build an Infectious Disease Hospital in Basti, and had advised the Civil Surgeon to elicit opinion of the Medical Profession in the town as to the nature and capacity of the Hospital. The members, however welcomed the news and expressed their view that to begin with the hospital must have at least 25 beds and should be so spacious as to be able to accommodate 40 patients in times of emergency and epidemics.

Copy of the Extract of resolution No. 2 passed at the meeting of the District Anti-T.B. Association Basti held on 21-4-49 under the Presidentship of D.M. was considered and the Secretary was advised to intimate the Secretary District Anti-T.B. Association, Basti, that no funds can be collected from the patients attending the dispensaries of the private medical practitioners on compulsory basis, although an attempt would advisably be made to collect some money on voluntary basis but such collections were thought to be not at all very encouraging.

* * * * *

An ordinary meeting was held at 8-30 p.m. at Dr. N. P. Dubey's place at Khalilabad on 1st August, 1949 under the Presidentship of Dr. S. D. Saharia in the absence of Major J. N. Jaswal.

Dr. N. L. Bhatia demonstrated a case in the Basti Sugar Mills premises on our way to Khalilabad.

Dr. Chanchal Singh discussed at length one peculiar case of his at the same site (Shree Kohli's son).

An interesting case of spontaneous pneumothorax with effusion complicated with Fever (indicating empyema) and diabetes was demonstrated by Dr. N. P. Dubey. A long and interesting discussion followed.

Following were elected President and Vice-Presidents of the U.P. Provincial Branch of I.M.A. for the year 1949-50 by this branch.

President—Dr. J. N. Srivastava Gorakhpur.

Vice-presidents—Dr. K. D. Tripathi, Basti; Dr. P. L. Sood, Lucknow and Dr. R. Prasad, Gorakhpur.

Dr. N. P. Dubey pointed out the anomalies of the recent departmental circular directing the medical officer posted in rural areas not to charge or accept more than double the fee prescribed for them in the radius of two miles from their

dispensary when they were required to go beyond two miles. Approaches in the rural areas are rather difficult and conveyance is nothing else but ricketty ekkas, elephants, horse, bullock carts or walking on foot in dusty or muddy, uneven and narrow bullock cart ruts. Sometimes even these ruts are not available. Most of the rural areas towns are no longer than two miles whereas a main road is their breadth in most cases. Sometimes it is difficult to go for half a mile from these dispensaries at perpendicular to these roads. That may take much more time and labour than one would take in even walking for two miles in the town on the pucca road. So this limit of fee ought to have been prescribed on the basis of time and conveyance rather than on the basis of distance. The Secretary was asked to refer the matter to the U.P. Provincial Secretary to take up the matter and to do the needful. The Provincial Honorary Secretary should also please find out from the Government the duty of a M.O. I/C of a rural dispensary if an urgent call comes to him from a distance say ten miles, as these dispensaries in most cases do not have a doctor in the rural areas within a radius of ten miles. Taking the case of Khalilabad, it is situated 20 miles from Basti and Gorakhpur, and fifteen miles from Menhdawal—a rural town where a M.O. is available. Now it is quite natural that the M.O. at Khalilabad will have to attend on calls from long distance. Is he expected to attend these calls on a maximum fee of Rs. 4/- and then is he allowed to leave his dispensary for these long distances without previous sanction of his boss sitting at district headquarters or somewhere on tour?

CACHAR BRANCH—Minutes of a monthly meeting held on the 25th June, 1949 at the Civil Hospital, Silchar.

Twenty doctors were present. Dr. S. K. Dutta was voted to the Chair.

Capt. N. C. Das read a paper on 'School Health Service' giving practical details and how to work out the scheme. All present appreciated the spirit and well thought out ideas.

Resolved that this meeting urges upon the Government of Assam to give immediate effect to the facilities enumerated below to the Medical Officers deputed to emergency service during World War II as promised in their communique dated 28th January, 1943:

Counting the period of Army Service as double towards pay, promotion and pension.

It is learnt that a deputation waited on the Hon'ble Medical Minister, Assam on the 28th June, 1948 to put before him the viewpoints of the medical licentiates. The Hon'ble Minister gave the deputationists a patient hearing and promised to redress some of the grievances. Special mention was made regarding establishment of uniform composite medical service with some interim arrangements, reconsideration of recommendations of the Provincial Pay Committee.

Resolved that this meeting desires to bring it to the notice of the Government of Assam that there has been great discontent and dissatisfaction amongst the Medical Licentiates for the revised scale of pay. It is not at all commensurate with the economic conditions and the disparity in the scale of pay amongst the various grades in the Medical and Public Health departments—senior and junior—is very marked. This meeting further learns that the Hon'ble Minister for Medical and Public Health assured the representatives of the Licentiates that the new scale of pay of the District Medical Officers of Health with the proviso M.B., D.P.H.—the minimum qualification—was meant for direct appointments and without any prejudice to the interests of the medical licentiates promoted to the rank and that the number of promotion of the members of the Assam Medical Service Junior to the Senior Service had already been increased from four to seven. It is, therefore, resolved that the Government be requested to give effect to them.

Resolved that every effort should be made to bring all the registered medical practitioners within the fold of the Association.

CHANDAUSI BRANCH—The meeting was held on the 12th May, 1949 at the residence of Dr. Mrs. Renuka Devi Dikshit, V. C. Hospital, Chandausi, at 5 p.m. under the Presidentship of Dr. Dina Nath Wadhawan.

The following resolutions were passed.

1. Resolved that a branch be formed of I.M.A. with 5 members at Chandausi.

2. Resolved that every effort be made to increase the number of members to join the I.M.A. in future.

3. Resolved that Chandausi Branch of Indian Medical Association has considered the U.P. Government letter No. St-201/x-902 (8)/1948, dated 31- -49 addressed to the Honorary Provincial Secretary, I.M.A. U.P. Provincial Branch, Lucknow, and places before the Government the view that the dispensing of medicines by a medical practitioner does not constitute a "Sale" and, therefore, such dispensing of medicines by a doctor to this own patients should not be liable to a sales tax and the nominal fee. This branch hopes that the Government will bring its views in the uniformity with other provinces like Punjab, Central Provinces, Madras and Bombay.

Election of office-bearers for the year.

President—Dr. Dina Nath Wadhawan, *Vice-Presidents*—Dr. D. Gangoli and Dr. D. D. Ahuja, Rly., *Secretary*—Dr. B. B. L. Dikshit, *Joint Secretary & Treasurer*—Dr. Renuka Devi Dikshit, *Representative to the Central Council*—Dr. B. B. L. Dikshit, Chandausi.

DELHI MEDICAL ASSOCIATION—Abstract of Annual Report for the year 1948-1949.

Petrol and Quinine—Both items have received our usual attention and needs of the members were met to a great extent and the co-operation of the members in the question of petrol is appreciated.

Equipment—We have been able to add 50 new chairs, two fans, two new cycles and a typewriter and certain other minor things.

Library—In spite of the best efforts of Dr. B. K. Rao we have not been able to circulate the journals to the members this year. This question is before the Executive Committee and efforts will be made to do something in this connection. 6 volumes of books were added to the Library. 20 journals were ordered this year. It is felt that our Library needs some improvement.

Meetings—We had 13 meetings of the Executive Committee this year. Meetings were well-attended and no meeting had to be adjourned for want of quorum. Following other meetings were held during the year:—

General Meetings:—

1. Social Meeting.
2. Extra-ordinary General Meetings.
3. Scientific Section Meetings.

The Scientific Section Meetings were well-attended and the following speakers took part:—

No.	*Date*	*Name*	*Subjects*
1.	5-7-48	Dr. V. R. Khanolkar, B.SC., M.D. (LOND.) Director of Tata Memorial Hospital Laboratories, Bombay.	Early diagnosis of Cancer.
2.	22-7-48	Schering Corporation (U.S.A.)	1. Endocrine (Films) 2. Sterility (Films)
3.	4th, 5th, 6th Aug. 1948	British Information Service	Facial Surgery Films.
4.	17th, 18th, 19th Aug. 1948	do	do
5.	28-8-48	Dr. S. C. Sen, M.B., D.M.R.E. (*Cantab*).	Experience during recent visit to the U.S.A.
6.	17-9-48	Dr. A. Roy Chowdhury, B.SC., M.B.	Streptomycin in the Treatment of Tuberculosis.
7.	15-10-48	Dr. T. J. Agrawal, M.S.	The place of Radium in Malignant disease.
8.	29-10-48	Dr. R. V. Sathe, M.D., M.R.C.P., Physician J. J. Hospital, Bombay.	Some aspects of Coronary Thrombosis.
9.	17-11-48	Eli Lilly & Company of India Incor.	Thiamine Chloride, Riboflavine and Nicotinic Acid.
10.	10-12-48	Dr. Sri Kishen, M.B., B.S.	Fevers—Rationale of the Treatment specially of the prolonged type.
11.	25-1-49	G/Capt. M. M. Shrinagesh, O.B.E., Principal Medical Officer (R.I.A.F.)	The Doctors in the Air.
12.	7-2-49	Dr. S. R. Chopra, M.B., B.S.	General Physicians and the Fractures.
13.	26-3-49	Mr. J. Louis Orton, formerly Psychiatrist and speech Therapeutist British Army.	Some common defects of speech their genesis and Treatment.
14.	28-3-49	P. V. Benjamin, Adviser in Tuberculosis to the Ministry of Health.	The Role of B.C.G. in Prophylaxis against Tuberculosis.

At a recent meeting of the Executive Committee it was decided to approach the Government to lay open to the members of the Association to treat their patients in the Government aided Nursing Home and paying wards and such cottages attached to Hospitals. Steps are being taken in this connection.

Executive Committee has also taken in hand and is approaching the Government shortly in regard to the Telephone and Electric connections to our members.

The other day we met the members of the Central Council and Working Committee of the Indian Medical Association at Tea we have had a good gathering.

The following Office-bearers and members of the Executive Committee were elected for this year:—

Dr. Ved Prakash (President), Dr. A. P. Mittra (Vice-President), Dr. J. N. Bahadur (Honorary Secretary), Dr. K. L. Jain (Hony. Jt.-Secretary), Dr. S. R. Chopra (Hony. Treasurer), Dr. Miss Lila Raja (Hony. Librarian), Dr. A. Batty, Dr. H. S. Dhupia, Dr. N. Vythianathan, Dr. P. C. Dhanda, Dr. R. C. Goulatia, Dr. H. R. Dawar, Dr. R. C. Suri, Dr. D. N. Sharma, Dr. B. K. Rao, Dr. G. L. Chopra and Dr. Dhyan Singh Khurana.

EAST GODAVARI BRANCH—A meeting took place on 14-5-49 at the Government Headquarters Hospital, Kakinada under the Presidentship of Dr. K. Madhava Menon, District Medical Officer.

Messrs. Raka Corporation Limited, Madras, organised the Tea and a Film Show on "Parapanit" by courtesy of Messrs. Amalgamated Chemicals and Dyestuffs Co. Ltd., Bombay.

Dr. P. Simhadri, lecturer, Medical College, Guntur, very kindly gave the physiology of the extra pyramidal system. Dr. D. A. Mohanrao, Kakinada, gave an interesting lecture on Asthma. Dr. M. N. Rao of the All-India Institute of Hygiene and Public Health, Calcutta, has kindly responded to address the members on Industrial Medicine.

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Minutes of the Monthly Clinical Meeting held at Ramachandrapuram on 18-6-49 under the Presidentship of Dr. K. Madhavamenon, M.B.B.S.

After Tea, a condolence resolution was passed on the sudden demise of Dr. U. Sitaramaswamy Naidu, the grand old doctor of Kakinada.

Dr. T. Chalapathirao of Ramachandrapuram gave a lecture on the Psychology of Sex.

Dr. Mrs. M. V. Abraham, Ramachandrapuram, read a paper on Eclampsia.

Dr. C. Ramachandrarao, Kakinada spoke on an organised Survey on Pulmonary Tuberculosis.

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A Meeting of the Association was held on 16th July 49 at the Government Head Quarters Hospital, Kakinada, under the Presidentship of Dr. K. Madhavamenon, District Medical Officer.

There was a tea party arranged by courtesy of Messrs. Lederle Laboratories (India) Ltd., Bombay.

Dr. M. Goparaju, was unanimously elected as Treasurer and Joint Secretary *vice* Dr. M. V. Hanumantharao, transferred.

It was unanimously passed to request the Rayalaseema Association to invite the All India Medical Conference to be held in December.

Members are requested to contribute liberally to the Memorial Fund of Doctors P. Gurumurty and Y. Subbarao.

Dr. I. Jogarao, Kakinada, addressed the members on the Role of Folic Acid in Anæmias with his experience. Dr. D. A. Mohanrao explained the incidence of pernicious anæmia in India.

Messrs. Lederle Laboratories demonstrated a film on the role of folic acid in anaemia.

Dr. H. Sumitrarao gave a monorecital on three important characters of Shakespeare. His depiction of Shylock was superb.

GORAKHPUR BRANCH—An ordinary general meeting was held on 27-5-1949 at the residence of Dr. M. P. Chaturvedi.

The resolutions of Dr. Bhalla:

(1) That the U.P. Government should take over the administration of all Municipal Dispensaries and provincialise the Medical Officers serving under Municipal Boards.

(2) That the dispensing of medicines by medical practitioners does not constitute a sale and therefore such dispensing of medicines, by a doctor to his own patients should not be liable to a sale tax.

(3) That the U.P. Government should be requested to consider the pay scale recommended by the Pay Committee to all medical officers in the services which is very humiliating in comparison to the scale of pay of sanitary staff and nursing staff and of other departments apart from medical department.

Scale of Pay

Medical Licentiates	..	Rs. 120-4-160-7½-210
Sanitary Inspector ..	..	„ 120-5-160-7½-210
Chief Sanitary Inspector	..	„ 150-300

moved by him and seconded by Dr. Phillips were unanimously passed. It was also resolved to write to the Secretary Provincial Branch to suggest to him to move all other associations also on this point. It was also resolved that copies of the resolutions passed be sent to the following:—

1. The Hon'ble Minister for Local Self-Government U.P.
2. The Administrator, Municipal Board, Gorakhpur.
3. The Director-General Indian Medical and Health Services.

* * * * *

An ordinary general meeting was held in the Union Club at 7 P.M. on 16th July 1949:

Resolved that the name of Dr. Mrs. Wood be sent for nomination to act as a member of the Advisory Committee for the District Head Quarter Hospital.

The following members have volunteered their services for medical relief work in Kashmir:—

1. Capt. S. C. Banerji from 1st Dec. to 31st Dec. 2. Dr. A. S. Bhalla. 3. Dr. R. Gulhati.

Some of the servicemen also expressed their desire for voluteering their services and it was resolved that a reference on the subject of volunteering the services by the services men class especially those in Provincial Services be made to the Provincial Branch to enquire and inform whether such men could also volunteer.

Circular No. 42 *re.* C.F.C. at the rate of Rs. 9/- per member instead of Rs. 7/- per member annually from 1st October 1949. It was noted but at the same time it was moved by Dr. A. Bhalla as to why such contributions are raised by Central Committee without consulting the Provincial Branch and the Provincial Branch consulting the local branches. It was therefore resolved that reference on this point be made to the Provincial Branch.

Resolved that a vote of thanks be sent to the Hony. Secretary, Union Club, for kindly sparing us a room of the building, lights, fans and furniture, etc., for the use of the I.M.A. local Branch on 16-7-49.

In the end Capt. S. C. Banerji demonstrated a very interesting case of mixed Leprosy (both lepromatous and neural). He also told about the marvellous results achieved in his case with Bromine and Diomedine which is a sulpha-drug.

Dr. Banerji also emphasised the need of having a Leper Asylum for the district as there were a good number of people in this district suffering from leprosy and it was resolved that U.P. Government be moved for creating a Leper Asylum in this District also.

The President also expressed his opinion that lepers in service should not be allowed to take up work and mix with other healthy people unless they have been treated for at least 2 years.

The members were entertained to a sumptuous dinner by Dr. S. C. Banerji and the President thanked him heartily for the nice entertainment.

JUBBULPORE BRANCH—A General Meeting was held on 21-8-49 to celebrate the 2nd Anniversary of Independence under the Presidentship of Dr. S. C. Barat.

The following names were duly proposed and seconded for the office of the President and Vice-Presidents for the Provincial Branch and passed unanimously:

President—Dr. T. B. Sarvate. *Vice-Presidents*—Dr. P. H. Sant, Rao, Rao Bahadur Dr. B. R. Chandorkar and Dr. Bhiwapurkar.

In view of the fact that during motor accidents much help can be rendered by the motor drivers if they are trained in first-aid, the following resolution was moved from the chair and unanimously passed:

"The Jubbulpore Medical Association resolves that every Motor Vehicle should be equipped with first-aid appliances and every motor driver should be trained to render first-aid intelligently.

It further resolves that the training centres should be opened by the Government in all district headquarters to give training to the motor drivers."

Copy of this resolution to be sent to I.G. Police, C.P. and Berar, Nagpur.

The meeting was declared closed and the house then enjoyed the cereal-free sumptuous dinner given on behalf of Dr. Miss Kamdin.

After the dinner a short speech was delivered by Dr. S. C. Barat and a toast for the Indian Union was proposed by him. Then the toasts for I.M.A. by Dr. S. C. Sheorey,

for P.M.A. by Dr. Sarvate, for J.M.A. by Dr. Dube and for the present office-bearers by Dr. Subedar were proposed one after another.

A couplet was read by Dr. Chopra, Secretary J.M.A. befitting the occasion. Dr. Deo gave a humorous lecture on "Sanatan Dharma."

There was fancy dress competition also. Inspite of the misunderstanding due to hurried notices the following took part Drs. Harshey, Subedar, Miss Kamdin, Smt. Dube, Deo, Chakrawarti, Mukerji and Chopra.

Col. Agate was the judge. Dr. Subedar (dressed as Sadhu) was awarded the first prize. Dr. Kamdin (as fairy lady) was the next. Dr. Deo (as postman) was the third. Dr. Harshey (as Marwari Seth) got the consolation prize from Dr. S. V. Tungar.

There were songs and music by Drs. Harshey, Deo, Phadnis, Subedar and Naidu.

After vote of thanks to Drs. Kamdin, Barat, Smt. Dube the house dispersed.

MADURA BRANCH—The Southern Districts Medical Conference organised by the Madura Medical Association was held at Kodaikanal on Saturday and Sunday the 21st and 22nd May 1949. More than 150 doctors from the districts of Coimbatore, Salem, South-Arcot, Tanjore, Trichy, Mathurai, Ramnad and Tinnevelly, and a few from Madras City attended. The members arrived by special buses and cars, mostly on the morning of the 21st, though a few had arrived earlier. About 100 doctors availed themselves of the boarding and lodging arranged in the Holiday Home. About 30 doctors were accommodated in the Municipal Rest houses, the travellers bungalow and the Municipal schools. The rest had arranged their own boarding and lodging with friends.

Dr. A. S. Mannady Nayar, the surgeon-general, sent a message regretting his inability to attend on account of official engagements at Delhi.

The meeting began at 2 P.M. on 21-5-49 in the Kodaikanal Missionary Union hall with a prayer by Kumari Vijialakshmi. Dr. P. Vadamalayan, President of the Madura Association, welcomed the members and requested Lt. Col. T. S. Shastri, to take the chair. The Chairman in his address dealt chiefly on anomalies in post-graduate medical education, and requested the government to increase the lower limit of paying patients from Rs. 50 to Rs. 100. The organising secretary then made some announcements regarding the visit to the Observatory and picnics etc.

Dr. Jones of Miraj read a paper on Bronchoscopy and Bronchography prepared by Dr. Reeve Betts of Vellore. He explained in detail the technique of Bronchoscopy and Bronchography and mentioned their various uses. He was of the opinion that more doctors should learn and be able to do these as a routine method of examination in diseases of the chest.

Dr. V. C. Rambo of the Christian Medical College, Vellore, gave a lecture on Some External Eye conditions and illustrated the same with excellent lantern slides. He dealt mainly with Acute Catarrhal Conjunctivitis, Trachoma, Follicular Conjunctivitis etc., and explained the method of prevention of the spread of Acute Catarrhal Conjunctivitis in school children by daily prophylactic instillation of Zinc ½% and Boric 3% drops during the epidemic period.

Dr. K. M. Ananthan gave a very humorous and interesting talk on his experiences of South Indian hill stations during his official career and stated that he considered Kodaikanal the most healthy of them all. The members were then entertained to a sumptuous Tea by Mr. S. G. Jayaraja Nadar, proprietor of the Holiday Home.

By the kind courtesy of the Philips Electrical Company India Ltd., a medical sound film on Angina Pectoris was next screened.

The Hon. D. Gopala Reddi, Finance Minister in the Madras Government, who had been invited to tea, arrived a little later and witnessed the film-show. He was introduced to the audience by the president. The Minister speaking a few words on the occasion, stressed the value of such conferences and the medical films for the betterment of the knowledge of the members of the medical profession. The day's session ended at 7 P.M.

The members again assembled at 9-30 A.M. on Sunday, the 22nd May, in the premises of the Indian Club Kodaikanal. After prayer the proceedings began with a lecture on Tropical Eosinophilia by Dr. P. K. Kalyanaraman of Coimbatore. The lecture was short, spicy and interesting and was followed by a discussion in which many members took part.

Dr. S. Balasubramaniam, Cuddappa, delivered an extempore lecture on Ileo-caecal diseases. The lecturer traced in detail the surgical anatomy, the symptomatology, the pathology and treatment of appendicitis, and also briefly dealt with the other most important ileo-caecal conditions. A discussion followed the lecture.

Dr. K. G. Ramabadran then read a paper on Median Nerve Test in Leprosy, prepared by Dr. Joseph of the B.E.L.R.A.

The president in his concluding remarks, mentioned the need for specialists in this country and the necessity for giving them proper training. He also urged the abolition of the communal rule in selection for appointments and admissions to the Medical College.

Some of the members were shown round the Solar Physics Observatory on the 22nd afternoon.

* * * * *

The Provincial Council met in the Municipal Council hall at 2 P.M. on the 22nd under the presidency of Dr. P. A. S. Raghavan.

A party of members in two buses and three cars left on the 23rd morning at 9-30 A.M. for a sight-seeing trip and a picnic lunch at the Berijam lake. The party had a pleasant trip in good weather and returned to Kodaikanal by 2-30 P.M. Most of the members left Kodaikanal on the 23rd afternoon and a few more on the 24th.

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The monthly meeting was held at a picnic at Kumbakkarai, a delightful spot with a fine waterfall, about 5 miles from

Periyakulam on Saturday, the 23rd July 1949. The members arrived before noon, most of them by a special bus from Mathurai visiting Peranai *en route*. The members of the profession at Periyakulam led by Dr. S. Pichumani had made all the arrangements for the reception of the members and for the lunch and tea and were the hosts. The attendance of members was about 45 including the hosts. After a pleasant bath in the falls and a sumptuous lunch the meeting began at 2-45 P.M. with Dr. P. Vadamalayan, the President, in the chair.

Dr. Pichumani traced in brief his enlistment in the Indian Army, as a King's Commissioned Officer, and then after the surrender of Malaya to the Japanese as an officer of the I.N.A. for a brief period of two months and after resigning from the I.N.A. as a prisoner of war in Japanese hands as medical officer in charge of a concentration camp in the South Sea Island of Rabaul. He explained the pressure of work he had to do to the civilians in Penang as a result of the bombing and said that after the Japanese occupation and the surrender of the army in Singapore there was a progressive deterioration in the medical equipment and attention. He joined the I.N.A. and worked for 2 months and resigned from it and refused to rejoin after the dissolution of the first I.N.A. He was therefore held as a prisoner of war and transported along with 150 others to the South Sea Island of Rabaul. The experiences of himself and his co-prisoners in the Japanese steamer that transported them was described by him in detail and he considered that it was nothing less than a regular hell. The usual diseases rampant in the concentration camp were heavy infection with Dysentery, Typhoid and Tetanus and Vitamin deficiency diseases. In Rabaul as the Japanese rations were very poor and meagre they had to subsist mainly on cocoanuts which were abundant on the island. He also found by experience that a slow intravenous injection of pure swet cocoanut water from 20 c.c. upto 100 c.c. was found very useful in weaknesses due to deficiency diseases. On the surrender of Japan, they were relieved by the Australians and life in the concentration camp was thereafter more pleasant.

The lecturer then answered a number of questions.

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The monthly meeting was held at 5 p.m. on Saturday, the 20th August, 1949 in the Erskine Hospital, Mathurai. About 60 doctors attended. After a sumptuous tea provided by the Amalgamated Chemicals & Dyestuffs Company Ltd., the meeting commenced with Dr. P. Vadamalayan in the chair.

Dr. S. Kanthimathinathan was elected as the third member of the Central Council from the branch.

Dr. M. R. Natarajan was elected to the South Indian Provincial Council of the Indian Medical Association.

Dr. K. S. Narayan dealt in brief the various conditions of the external ear. He enumerated the anatomical malformations, lesions produced by mechanical and chemical irritants, erysipelas, eczema, syphilitic condylomata etc. and mentioned their treatment. Speaking of the conditions of the external meatus, he dealt with foreign bodies, fungi, impacted wax, atresia meatus and furunculosis and dealt in detail with their diagnosis, prognosis and treatment. He also mentioned the external auditory conditions causing vertigo.

NEGAPATAM BRANCH—The second annual gathering was celebrated on 24-7-49. Dr. A. S. Mannady Nair, Surgeon-General with the Government of Madras, presided on the occasion. The proceedings began by 11 a.m. All the members of the local branch were present. Members from sister medical associations from Trichy, Chettinad and Tanjore were present, including the D.M.O. of Tanjore. After prayer Dr. C. H. Venkateswaran, Civil Surgeon, Government Hospital, Negapattinam, who is the president of the local branch welcomed all the members and the Surgeon-General and gave a short welcome address.

He appealed to the authorities to establish a General Medical Council for the whole of India with statutory and reciprocal powers to bring about a uniform high standard of medical education throughout the country. He stressed that since each provincial government had its own scheme for this purpose, the Central to take up the subject. The medical register maintained by this Council should include all the licentiates at present practising in the country and the licentiates should be allowed to appear for any final examination without restriction of further study in a college. He also said that there should be only one provincial cadre in Medical Service and appealed to the authorities to do away with the existing class II assistant surgeons by promoting all the existing class II assistant Surgeons to class I. He laid particular emphasis on the following points. 1. Our Medical men should take more interest in collecting statistics and publish their data and observations in their journals. 2. Medical men should take more holidays and take to post-graduate study. He also said more medical men should get into the local bodies and legislatures.

Messages were read from Hon'ble Dr. T. S. S. Rajan, Public Health Minister with the Government of Madras, Dr. T. S. Tirumurthy of Madras, Major C. Raman, Civil Surgeon, Cochin, Dr. G. V. Hanumantha Rao, President, Andhra Provincial Branch, Dr. D. V. Venkappa of Madras and others wishing the success of the deliberations.

The president in his speech gave the assurance that there would be soon only one cadre in the Provincial medical service. He said that in India a good beginning was made in the matter of National Medical Relief long ago as the State is maintaining a large number of hospitals and the ideal to be aimed at was the National system introduced in the United Kingdom in the year 1948. He pointed out that though the British Medical Association at first objected to this Nationalization all the younger members took to it and the scheme was working well. He was sure that eventually India also would have some such comprehensive scheme. He was not in a position to say as per the Chopra's Committee how it could be possible to turn up Ayurvedic Doctors with a course of six months training.

At 12-30 P.M. the members adjourned to lunch given by the courtesy of Messrs. Albert David, Calcutta.

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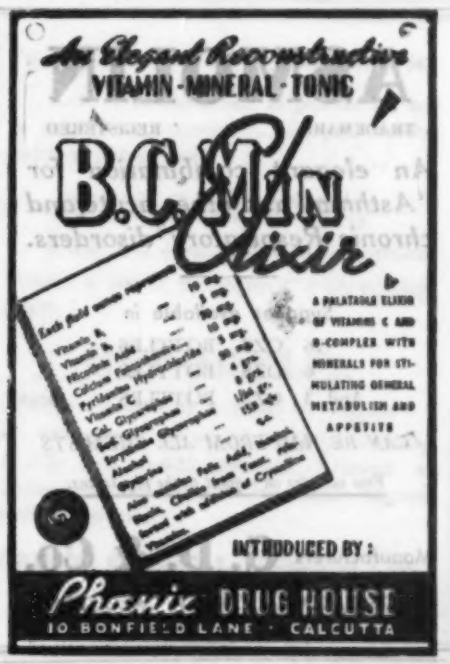
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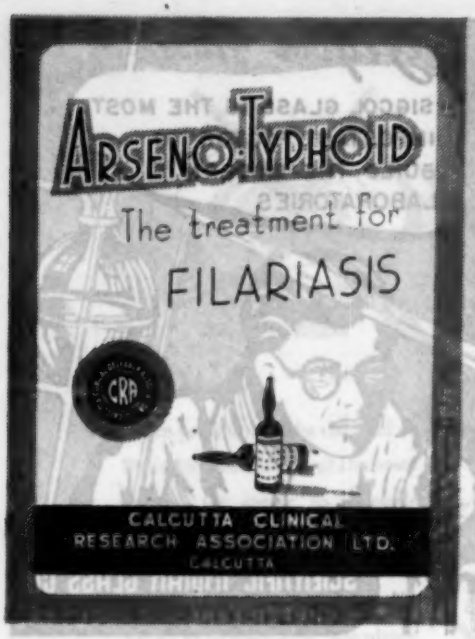

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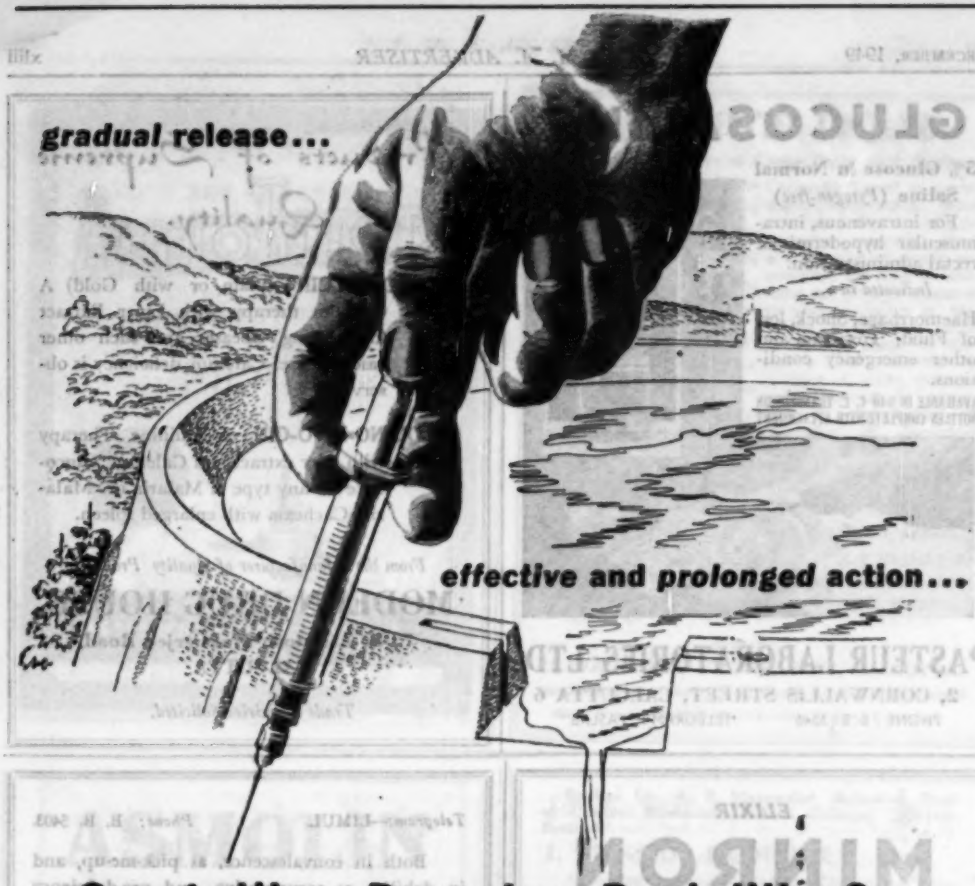

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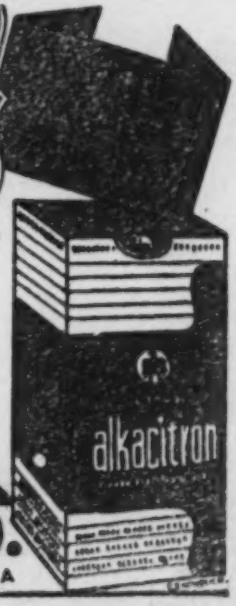

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